2005 IAP

Fort Knox Military Reservation

Installation Action Plan

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Fort Knox Military Reservation

Fort Knox, Kentucky

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Statement of Purpose

The purpose of the Installation Action Plan (IAP) is to outline the total multi-year restoration program for an installation. The plan will define Installation Restoration Program (IRP) requirements and propose a comprehensive approach and associated costs to conduct future investigations and remedial actions at each Solid Waste Management Unit (SWMU) at the installation and other areas of concern.

In an effort to coordinate planning information between the IRP manager, Army Environmental Center (USAEC), installations, executing agencies, regulatory agencies, and the public, an IAP has been completed for Fort Knox Military Reservation. The IAP is used to track requirements, schedules and tentative budgets for all major Army installation restoration programs.

All site specific funding and schedule information has been prepared according to projected overall Army funding levels and is therefore subject to change during the document's annual review. Under current project funding, all remedies will be in place at Fort Knox by the end of 2007.

The following agencies contributed to the formulation and completion of this 2005 Installation Action Plan for Fort Knox. The planning workshop was held on 11 and 12 March, 2004:

Engineering and Environment, Inc.

Fort Knox IRP

Jacobs Engineering

Kentucky Department of Environmental Protection

SAIC

Shaw Environmental

URS Corporation

US Army Corps. of Engineers, Louisville

US Army Corps. of Engineers, Nashville

US Army Environmental Center

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ER,A Response Complete Sites, continued

Schedule

Remediation Activities

Community Involvement

Acronyms & Abbreviations

ACSIM	Assistant Chief of Staff for Installation Management
AEDB-R	Army Environmental Database - Restoration
AMSL	Above Mean Sea Level
AST	Aboveground Storage Tank
BRA	Baseline Risk Assessment
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
C/DD	Construction/Demolition Debris
CAP	Corrective Action Plan
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CMI	Corrective Measures Investigation
CMS	Corrective Measures Study
COE	Corps of Engineers
CWR	Central Wash Rack
cy	cubic yards
DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenydichloroethene
DDT	Dichlorodiphenyltrichloroethane
DERA	Defense Environmental Restoration Account (currently called ER,A)
DLA	Defense Logistics Agency
DNAPL	Dense Non-aqueous phase liquid
DPT	Direct Push Technology
DRMO	Defense Reutilization & Marketing Office
ECAP	Environmental Compliance Assessment Program
EMD	Environmental Management Division
EOD	Explosive Ordnance Demolition
EPA	United States Environmental Protection Agency
EPR	Environmental Program Requirement
ER,A	Environmental Restoration, Army (formerly DERA)
FS	Feasibility Study
FTK	Fort Knox (as designated in AEDB-R)
FTKX	Fort Knox (as designated in AEDB-R)
FY	Fiscal Year
GW	Groundwater
HHRA	Human Health Risk Assessment
HTRW	Hazardous Toxic Radioactive Waste
HTW	Hazardous and Toxic Waste
HW	Hazardous Waste
IA	Interim Action
IAP	Installation Action Plan
IDW	Investigative-Derived Wastes
IM	Interim Measure
IRA	Interim Remedial Action
IRP	Installation Restoration Program
JP-4	Jet Propellant Number Four
KDEP	Kentucky Department of Environmental Protection
KDWM	Kentucky Dept of Wildlife Management
kg	Kilogram
KPDES	Kentucky Pollution Discharge Elimination System
LTM	Long Term Monitoring
m/km	meters/kilometers
MCL	Maximum Contaminant Level
MGD	Million Gallons per day
MNA	Monitored Natural Attenuation
NFA	No Further Action
NOTI	Notice of Technical Inadequacy
NOV	Notice of Violation
NPL	National Priorities List
OB/OD	Open Burn/Open Detonation
OE	Ordnance Explosive
OEW	Ordnance Explosive Waste
OMA	Operations and Maintenance Account
OWS	Oil/Water Separators
PA	Preliminary Assessment
PAH	Polynuclear Aromatic Hydrocarbons
PCB	polychlorinated biphenyl
PCE	Perchloroethylene
PCP	pentachlorophenol
ph	potential hydrogen
POL	Petroleum, Oil & Lubricants
POM	Program, Operation, Management
ppm	parts per million
PRAC	Pre-placed Remedial Action Contract
Pre-CAP	Pre-Corrective Action Plan
PY	Previous Year
QA	Quality Assurance
QTR	Quarter
RA	Remedial Action
RA(C)	Remedial Action (Construction)
RA(O)	Remedial Action (Operation)
RAB	Restoration Advisory Board
RC	Response Complete
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
REM	Removal
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RI	Remedial Investigation
RRSE	Relative Risk Site Evaluation
S&A	Supervision and Administration
S&R	Supervision and Review
SI	Site Inspection
SVE	Soil Vapor Extraction
SVOCs	Semi Volatile Organic Compounds
SWMU	Solid Waste Management Unit
TCE	trichloroethylene
TCLP	Toxicity Characteristic Leachate Procedure
TRADOC	Training and Doctrine
TSCA	Toxic Substances Control Act
TSD	Transportation, Storage and Disposal

Acronyms continued on next page

Acronyms & Abbreviations

ug/kg	micrograms per kilogram
USAARMC	U.S. Army Armor Center
USACE	United States Army Corps of Engineers
USACH	U.S. Army Community Hospital
USACHPPM	United States Army Center for Health Promotion and Preventive Medicine (formerly called USAEHA)
USAEC	United States Army Environmental Center
USAEHA	United States Army Environmental Hygiene Agency (currently called USACHPPM)
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
UXO	Unexploded Ordnance
VOCs	Volatile Organic Compounds
WWTP	Wastewater Treatment Plant

Conversion Chart

CERCLA and RCRA Acronym Conversions

CERCLA		**RCRA**
Preliminary Assessment (PA)	=	RCRA Facility Assessment (RFA)
Site Investigation (SI)	=	Confirmation Study (CS)
Remedial Investigation/ Feasibility Study (RI/FS)	=	RCRA Facility Investigation/Corrective Measures Study (RFI/CMS)
Remedial Design (RD)	=	Corrective Measures Implementation (Workplan) (DES)
Remedial Action (Construction) (RA(C))	=	Corrective Measures Implementation (Construction) (CMI(C))
Remedial Action (Operations) (RA(O))	=	Corrective Measures Implementation (Operation) (CMI(O))
Long Term Monitoring (LTM)	=	Long Term Monitoring (LTM)
Interim Remedial Action (IRA)	=	Interim Corrective Measure (ICM)

Summary

STATUS: Non-NPL with RCRA Part B Permit. 29 August 1986, Renewed 21 January 1997, (Exp. 21 February 2007)

TOTAL # OF AEDB-R SITES: 48 AEDB-R sites

ACTIVE ER,A SITES: 10 Active ER,A Sites (2 are RIP with CMI(O)/LTM)

RESPONSE COMPLETE (RC) SITES: 38 Response Complete Sites (7 are OMA funded Sites in AEDB-R)

DIFFERENT SITE TYPES:

Incinerator - 1	Washrack - 1
Sewage Effluent Settling Ponds - 1	USTs - 7
Surface Impoundment/Lagoon - 3	Storage Areas - 9
Landfill - 2	Pesticide Shop - 3
Sewage Treatment Plant - 1	Waste Treatment Plant - 1
AST - 1	Oil/Water Separators - 1
Fire/Crash Training Area - 1	Radioactive Waste Area - 1
Chemical Disposal - 3	Unexploded Munitions/Ordnance - 2
Containment Building - 1	POL (Petroleum/Lubricant) Lines - 1
Spill Site Area - 1	Maintenance Yard - 1
Other - 6	

CONTAMINANTS OF CONCERN: VOCs, SVOCs, PCBs, and Metals

MEDIA OF CONCERN: Surface and Subsurface Soil, Groundwater, Surface Water, Sediments

COMPLETED REM/ICM/CMI:

ICM	FTK-038	FY03
ICM	FTKX-33	FY03

(For a full list of past REM/IRA/RAs, see the REM/IRA/RAs Section)

CMI FIVE YEAR REVIEW: Planned Review for FTKX-01, 02, and 10 in FY09.

CURRENT IRP PHASES: **RFI** - 6 Sites **DES** - 3 Sites **CMI(C)** - 4 Sites **CMI(O)** - 2 Sites **LTM** - 2 Sites

(Includes all AEDB-R Sites. Total Number of AEDB-R sites are different from Phase Totals as one site can be in more than one phase)

PROJECTED IRP PHASES: **RFI** - 3 Sites **DES** - 2 Sites **CMI(C)** - 3 Sites **CMI(O)** - 1 Site **LTM** - 7 Sites

(Includes all AEDB-R Sites. Total Number of AEDB-R sites are different from Phase Totals as one site can be in more than one phase)

IDENTIFIED POSSIBLE REM/ICM/CMI: CMI – 6 Sites: FTKX-01, 10, 15D, 21, 24, 30

DURATION: Year of IRP Inception: 1986
Year of CMI Completion: 2007
Year of IRP Completion including LTM: 2034

Installation Information

SITE DESCRIPTION:

The Fort Knox Military Reservation, occupying approximately 110,000 acres of land in north central Kentucky, is located about 30 miles south of Louisville and 18 miles north of Elizabethtown. Portions of Fort Knox are located in Hardin, Meade, and Bullitt Counties. Highway U.S. 31 W crosses the western region of the post. The towns of West Point, just north of Fort Knox, and the town of Muldraugh, are surrounded by the reservation, and are adjacent to Highway U.S. 31 W. Fort Knox is bordered on the north by the Ohio River, cultivated lands, and wooded areas; on the east by farm land, hills, and wooded areas; on the south by farm land, hills, wooded areas, and the town of Radcliff; and on the west by farm land, Otter Creek Park, and the Ohio River.

COMMAND ORGANIZATION:

ACSIM (Assistant Chief of Staff for Installation Management)
INSTALLATION MANAGEMENT AREA: Southeast Region
INSTALLATION: USAARMC and Fort Knox

IRP EXECUTING AGENCIES:

- U.S. Army Corps of Engineers Louisville, KY
- U.S. Army Corps of Engineers Nashville, TN
- Environmental Management Division, Fort Knox, KY

REGULATORY PARTICIPATION:

FEDERAL: U.S. Environmental Protection Agency, Region IV
STATE: Kentucky Division of Waste Management, Hazardous Waste Branch

REGULATORY STATUS:

- RCRA Permit for Hazardous Waste Storage, Effective Date: 21 Jan 1997, Expiration Date: 21 Jan 2007
- Non-NPL Installation with RCRA Corrective Action

MAJOR CHANGES TO IAP FROM PREVIOUS YEAR (2004):

- RFI Phase dates for sites FTKX-40, FTKX15D, and FTKX-22 extended an additional year due to state requirement for further site characterization.

Installation Information

CURRENT ACTIVITY:

Fort Knox is an active Training and Doctrine (TRADOC) installation. USAARMC and Fort Knox have served as a military reservation of the U.S. Army since 1918. The primary missions of the installation are to train officers and enlisted soldiers for armor combat, to develop weapons and tactics, and to develop doctrine for the Armor Force. To accomplish these missions, USAARMC and Fort Knox uses 63 firing ranges, 18 major training areas, 5 base camps, 29 bivouac sites and numerous weapons firing points.

The central cantonment area is located in the west-central portion of the installation. The installation contains about 5,685 acres of cantonment area - the remaining installation acreage includes ranges, training and maneuver areas, live firing zones and impact areas.

HISTORIC ACTIVITY:

Fort Knox was named in honor of Revolutionary War Chief of Artillery, Major General Henry Knox, and was established as Camp Knox in January 1918 on 40.47 square kilometers of leased land. This camp was used for the purpose of creating a training center for field artillery during World War I. Construction of camp facilities began in July 1918. From 1922 to 1931, Camp Knox was closed as a permanent installation and used primarily as a training center for the Fifth Corps Area U.S. Army Reserve Officers, Citizens Military Training Camps, and National Guard Units. On January 1, 1932, Congress designated the installation as a permanent garrison and renamed it Fort Knox.

Fort Knox had expanded in various military activities before and after World War II and by 1943 the total area of the installation had increased to approximately 110,000 acres. In 1955, the Armored Combat Division was transferred to Fort Knox, and the principal mission of the installation since then has been basic combat training and advanced individual training in armored vehicles.

Fort Knox is a large quantity hazardous waste generator and has a permitted TSD facility to store hazardous waste generated at the installation. A variety of hazardous waste is generated as a result of maintenance activities, printing and painting operations, shops (i.e., automotive, battery, electric communications, and medical supply). Typical hazardous wastes include solvents and heavy metals, effluent fixer/developer, spent batteries, and chemical defense equipment. Additionally, many of the wastes received by the hazardous waste storage building (Building 2949) are commercial chemical products that are either surplus or have exceeded their shelf lives. Storage of the installation's hazardous waste takes place in a single hazardous waste storage building segregated into (5) bays.

Fort Knox applied for and received a RCRA Part B Permit for hazardous waste storage, in accordance with the 1984 Hazardous and Solid Waste Amendments to RCRA. Permit Number KY6-210-020-479 became effective on 28 September 1986 and expired 28 September 1996. The Hazardous Waste Management Permit was renewed in FY96 with an effective date of 21 February 1997 and expiration date of 21 February 2007. The Kentucky Natural Resources and Environmental Protection Cabinet, Department of Environmental Protection, Division of Waste Management is the regulatory agency that granted and administers the compliance reporting and inspections of this permit.

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HISTORIC ACTIVITY: continued

Fort Knox received a Notice of Violation (NOV), dated 19 February 1987, from the EPA for not providing corrective action information by December 1986, as required by the Part B Permit. The U.S. Army Environmental Hygiene Agency (USAEHA) made a site visit, 12-16 January 1987, to develop a preliminary corrective action information package. The RCRA Facility Assessment (RFA) Plan, dated 20 April 1988, prepared by USAEHA, based on the site visit and other information subsequently provided by Fort Knox, was submitted to EPA, fulfilling the requirements of the Part B Permit.

Fort Knox received a Notice of Technical Inadequacy (NOTI), dated 20 December 1988, on the RFA Plan. Fort Knox submitted the response to the NOTI on 16 February 1989. The response included a narrative discussion of each of the technical inadequacies, along with a revised Appendix C of the RFA Plan.

GEOGRAPHIC SETTING:

The Fort Knox Military Reservation lies within portions of the Mississippian Plateau and the Blue Grass Sections of the Interior Low Plateaus Province of north central Kentucky. A series of north-northwesterly trending escarpments extending across the eastern portion of Ft. Knox mark the boundary between the two sections. The topography of Ft. Knox consists of flat to gently rolling surfaces drained by northwesterly flowing tributaries of the Ohio River. The upland area in the western part of Ft. Knox is gently rolling, undulating and contains numerous sinkhole depressions developed in the underlying limestone. The alluvial plains, occupied by the Salt River, Rolling Fork and Ohio River are generally flat. Elevations within the cantonment area range from about 201 meters (660 feet) above mean sea level (AMSL) to about 235 meters (770 feet) AMSL.

WATER RESOURCES:

Most of the water supply for Ft. Knox comes from groundwater obtained from a shallow well field located five miles north of the cantonment area in alluvial sediments near the Ohio River. Twelve water supply wells, screened in the river sediments and ranging in depth from 32.3 to 45.1 meters (106 to 148 feet), provide up to approximately 9,462,500 liters (2.5 million gallons) per day. The average public water use at Ft. Knox is 9,027,225 liters (2,385,000 gallons) per day while the average industrial use is 1,003,025 liters (265,000 gallons) per day. Approximately 25 percent of the water used at Ft. Knox is supplied by Otter Creek. Groundwater quality varies with location. The water from the limestone aquifers is generally hard, attributed to calcium carbonate. The water from Otter Creek is generally hard and fairly clear but discolors during flooding, and bicarbonate, hardness, and pH levels are usually higher than those in the other streams on Ft. Knox. McCracken Spring, which emanates from the St. Louis limestone located just west of Otter Creek, provides the remainder of the Ft. Knox supply. The McCracken Spring reservoir and Otter Creek reservoir (located about 61 meter or 200 feet downstream of the McCracken Spring reservoir) supply up to 5.7 million liters per day (1.5 million gallons per day).

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Installation Information

HYDROGEOLOGIC SETTING:

The installation is underlain by sedimentary deposits of Mississippian and Devonian age. The deposits consist predominantly of limestone-rich strata that dip to the southwest at five to 17m/km. Mooretown Sandstone of upper Mississippian age is the uppermost bedrock formation in the vicinity of Ft. Knox. The Mooretown Sandstone forms a narrow ridge on the East Side of Ft. Knox, and consists of sandstone or black clayey shale. The unit is reported to have a thickness of approximately 4.6 meters (15 feet). Collapse structures are sometimes noted continuing into sinkholes in the underlying limestone. The St. Louis Limestone of the Mississippian age lies below the Mooretown Sandstone. The unit is approximately 91 meters (300 feet) thick and consists of coarsely crystalline, finely grained, gray to tan limestone. Gypsum may be locally present. The St. Louis limestone is noted for the presence of karst features. The formation produces a number of major springs and is the largest spring horizon at Ft. Knox. The Salem Limestone underlies the St. Louis Limestone and is approximately 21 meters (70 feet) thick. The limestone is crystalline and fossiliferous with a brown to gray color. Chert and shale may also be present. There is a minor spring horizon in the upper part of the formation. The Harrodsburg Limestone and Borden Formation represent the Lower Mississippian age deposits in the vicinity of the facility. The Harrodsburg Limestone is characterized by white, yellow, gray, and brown siliceous limestone. The limestone is crinoidal and silty and may contain geodes or chert. The unit is approximately 49 meters (160 feet) thick. Green to gray clayey shales of the Borden Formation lies below the Harrodsburg Limestone. The New Albany (upper Devonian) underlies the Borden Formation conformably. Overlying the bedrock units are Quaternary-age alluvium and residual soil of variable thickness. Alluvial deposits of silt, clay, sand, and gravel have been observed in terraces and floodplains in thickness up to 37 meters (120 feet). The local soils are silt with occasional gravel over silty clay of medium to high plasticity.

GROUNDWATER:

Groundwater beneath Ft. Knox will likely occur in two hydrologic regimes: in the bedrock zone and in the unconsolidated zone where the groundwater table is expected to be located at or below the soil-bedrock interface. The bedrock hydrogeology in the Ft. Knox area is primarily karstic with sinking streams, springs and sinkholes. The karst topography is the product of physical and chemical weathering of limestone bedrock. Flow through the subsurface in karst terrains often occurs in discrete dendritic or trellised conduits that can be similar to the flow of surface streams. Conduits in the Fort Knox vicinity originate along pre-existing planar structures such as bedding planes, joints, and faults. Acidic waters gradually erode the existing secondary permeability, forming larger solution features. Flow along bedding planes is typically the preferred route until solution features are found. Where the soil cover is thick, a perched water table may exist at or above the soil-bedrock interface where its flow is controlled by differences in the lithology of the unconsolidated material, or by irregularities in the weathered bedrock surface. Thin perched water is considered transient in nature, and eventually recharges the bedrock aquifer.

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SURFACE WATER:

Surface water at Ft. Knox generally falls into one of three categories: rivers, streams/ drainage, and impoundments.

ECOLOGICAL SETTINGS:

Upland sinkhole plains bordered by flat alluvial plains represent the topography of Ft. Knox. Precipitous slopes mark the transition between these two systems. These surfaces are either forested or open. Wooded areas are comprised largely of pine and hardwood deciduous trees. Common grass species prevalent in these areas include meadow fescue, broom sedge, foxtail grass, panic grass, Johnson grass, barnyard, and fall panicum. Both the wooded and open areas support a wide variety of terrestrial wildlife and birds. The Indiana Gray Bat, located within the Fort Knox Installation, is on the Endangered Species List. A number of game species are regularly hunted at Ft. Knox, including white-tailed deer, rabbits, raccoon, turkey, bobwhite quail, dove and woodcocks. The most common non-game bird species are hawks, pigeons, owls, larks, sparrows, robins, crows, cardinals, kingfishers, catbirds and swallows. There are 30 ponds and reservoirs on Ft. Knox that are used for recreation and maintenance of wildlife habitat. Many of these water bodies are shallow former farm ponds. Some of the larger bodies of water are stocked for sport fishing. Ft. Knox is drained by two major subdivisions of the Ohio River drainage basin, the Salt River Basin, and the Otter Creek Basin. At some sites, constituents present in groundwater that locally recharges surface waterways may potentially impact aquatic organisms. According to the U.S. Department of the Interior, Fish and Wildlife Service, there are numerous palustrine and riverine wetlands surrounding Ft. Knox. The majority of the palustrine wetlands consist of an unconsolidated shore or cobble bottom that is seasonally flooded or permanently flooded. There are also a few isolated palustrine wetlands with scrub-shrub or forest in areas that are classified as semi-permanently flooded with deciduous and evergreen species. Riverine wetlands are few but occur along the Salt River east of the Ft. Knox property boundary. The riverine wetlands are lower perennial in nature with an unconsolidated bottom of cobble and are permanently flooded. These wetlands perform wetland function such as a flood/flow retention, nutrient trapping, carbon export, etc., and provide wetland habitat for environmental receptors.

REGULATORY STATUS:

The RCRA Hazardous Waste Management Permit, Part B was renewed in FY96 with an effective date of 21 February 1997 and expiration date of 21 February 2007. The Kentucky Natural Resources and Environmental Protection Cabinet, Department of Environmental Protection, Division of Waste Management is the regulatory agency that granted and administers the compliance reporting and inspections of this permit.

Contamination Assessment

OVERVIEW

Fort Knox submitted a final RCRA Facility Assessment (RFA), 16 February 1989, which addressed 36 Solid Waste Management Units (SWMU) to EPA. Since that submission, an additional 9 SWMU sites have been identified that require a RFA, making a total of 48. POL and metals are the most common contaminants at these sites.

The RFA originally included 96 underground waste oil tanks requiring a RCRA Facility Investigation (RFI). Evidences of releases in the area of these tanks prompted the need for an investigation. The tank integrity was to be tested at each site, and where necessary, analysis of soil and groundwater were to be performed.

The RFA also included 47 oil-water separators requiring a RFI. Since no regular maintenance of these units had been established, soil sampling and analysis were to be done so that a determination, based upon the evidences of releases, could be made whether or not further investigation would be required.

Sites requiring a RFI, addressed by this RFA, are the closed and operating landfill, the hospital, Wastewater treatment plant, wash racks, above ground tanks, DRMO, Boatwright Maintenance Area, Godman Airfield, transformer storage areas, and explosive ordnance demolition (EOD) sites. There were 14 other SWMUs addressed by the RFA that did not require a RFI.

Description of Major IRP Concerns

- Meeting CMI phase dates due to the amount of time required to staff a Decision Document.
- Meeting projected phase dates due to the number of documents requiring state regulator review.

Sitewide Risk Assessment Work Plan

There will be several SWMUs at Fort Knox for which risk assessments will be required. The installation has developed a work plan for the assessment of human health and ecological risk associated with sites currently being evaluated under RCRA Corrective Action activities. The primary goal of this approach was to reach decisions regarding clean-up and closure of past waste sites in a consistent, technically defensible and expeditious manner. The plan lays out a systematic and consistent approach for risk assessments that will be conducted at the individual SWMUs. It unifies risk assessment guidance from Kentucky and USEPA and uses a tiered approach that allows stakeholders to reach decisions concerning a SWMU as early as possible in the process. The work plan does not attempt to address all site-specific circumstances; it provides a framework for developing future risk assessments. In January 2002, Fort Knox received KDEP approval of the plan. Starting in 2002, the approved work plan has been used as the guide by which risk assessments at the applicable SWMUs will be performed.

Contamination Assessment continued next page

OVERVIEW, continued

Sitewide Karst Groundwater

The majority of Fort Knox waste management units are located within an upland sinkhole plain where groundwater moves rapidly along discrete pathways and exits at several natural springs at the margins of the upland. Groundwater quality at the springs is of special concern because they directly contribute to the water quality of surface streams, which are significant routes of exposure for human health and ecological risk (including Fort Knox's drinking water supply).

Traditional monitoring wells are, at best, only partially effective in identifying and characterizing water that enters the karst groundwater system. Consequently, for SWMU sites with groundwater concerns, the state requires assessment and monitoring of karst groundwater at the resurgence springs. Six facilities were identified as having significant groundwater concerns (FTKX-01, FTKX-02, FTKX-15D, FTKX-20, FTKX-22, and FTKX-40).

Assessment of karst groundwater was initiated in FY95 as a component of assessment for the Residential Landfill (FTKX-02) with a karst survey and initial dye tracing. The study indicated that the resurgent springs are often several miles from the point of potential impact. In addition, the springs receive water from large areas of the upland, such that water quality at a spring may be potentially influenced by multiple SWMUs, off-post sources of contamination, and non-point-source pollution.

A Phase I Site Wide Karst Groundwater Assessment, conducted in FY98 and FY99, involved additional dye tracing to help identify the catchment basin areas for individual springs so that the potential influences on those springs can be identified. In addition, limited spring water and sediment sampling was conducted. No significant impact was identified. The Phase II Assessment activities conducted in FY99 through FY01 involved additional testing to further evaluate groundwater basins, and testing to evaluate contaminant dilution factors.

Groundwater monitoring at twelve (12) major springs four times a year was initiated with one baseline characterization event in FY02. Activities conducted in FY03 include four baseline events, repair of spring flow monitoring structures and equipment, continuous monitoring of spring flow conditions, and associated quarterly reporting of monitoring results. The eighth and final baseline monitoring event, and associated baseline summary report is completed in FY04, after which the program was reduced to detection-mode monitoring. Detection monitoring (as specified in the approved 2002 Sitewide Karst Groundwater Monitoring Plan) requires a less extensive list of analytical parameters, but the same four weather-sensitive monitoring events per year. At the same time, five springs were added to the program is support of assessment activities for SWMU FTKX-22. Long term detection mode monitoring is anticipated for the duration of closure activities for those SWMUs having groundwater concerns (as listed above).

Table 1 on the following page lists previous studies and significant documents completed at Fort Knox.

PREVIOUS STUDIES TABLE 1

Date	Contractor	Draft/Final	Name of Action	Site
Feb-86	Dames & Moore	Final	Work Plan Conduit Ground Water Study Residential Landfill	FTKX-02
Feb-89	AEHA	Final	RCRA Facility Assessment	All Sites
Nov-90	Law Environmental	Final	Final Pre-Investigation Submittal for RCRA Facility Investigation Closed Landfill and Tioga Springs Explosive Ordance Disposal Site	FTKX-01 and FTKX-30
Nov-90	Law Environmental	Final	Final Pre-Investigation Submittal for RCRA Facility Investigation Closed Landfill and Tioga Springs Explosive Ordance Disposal Site, Vol V. Chemical Data Axquisition Plan	Multiple Sites
Jan-92	Law Environmental	Final	Preliminary Contamination Assessment for RCRA Facility Investigation Multiple Solid Waste Management Units	Multiple Sites
Feb-92	SAIC	Final	Preliminary Site Inspection For Fort Knox Military Reservation	Multiple Sites
Apr-92	Law Environmental	Final	Final Quality Control Summary Report for RCRA Facility Investigation Multilple Solid Waste Management Units	Multiple Sites
Nov-92	Law Environmental	Final	Final Work Plan for Pesticide Rinsate Tank Closure FTKX-22	FTKX-22
Dec-92	Hallibuton NUS	Final	Resource Conservation and Recover Act Permit Application for Thermal Treatment Facilities, Volume 1	FTKX-29
Dec-92	Hallibuton NUS	Final	Resource Coservation and Recover Act Permit Application for Thermal Treatment Facilities, Volumn 2	FTKX-29
Mar-93	Law Environmental	Final	Final Report of Site Investigation Pesticide Rinsate Tank Closure, FTKX-22	FTKX-22
Sep-93	Law Environmental	Final	Final Phase I RCRA Facility Investigation Report for Multilple Solid Waste Management Units	Multiple Sites
Oct-93	Ogden	Final	RCRA Facility Investigation Work Plans Site 1473-A	FTKX-40
Apr-94	Dames & Moore	Final	Groundwater Assessment Plan For Residential Landfill	FTKX-02
May-94	Hallibuton NUS	Final	Airborn Hazardous Substances Program Subpart X Permiting Support	FTKX-29
Nov-94	Halliburton NUS	Final	Airborn Hazardous Substances Program Subpart X Permiting Support	FTKX-29
Feb-95	Ogden	Final	RFI Work Plan Site 1473-A	FTKX-40
Jun-95	Sverdrup	Final	Sampling and Analysis Plan for Site Investigation at Site 102, 2730 and 2952	FTKX-15A, FTKX-15B, FTKX-20
Sep-95	Ogden	Final	Phase I RFI Former UST Site 1473-A SWMU FTK-040	FTKX-40
Oct-95	Sverdrup	Final	RCRA Facility Investigation Work Plan for the Two Central Washracks FTKX-18	FTKX-18

Previous Studies Table continued next page

Contamination Assessment

PREVIOUS STUDIES TABLE 1, continued

Date	Contractor	Draft/Final	Name of Action	Site
Oct-95	Sverdrup	Final	RCRA Facility Investigation Work Plan for the Oil/Water Separators FTKX-017	FTKX-17
Oct-95	Sverdrup	Final	RCRA Facility Investigation Work Plan for the Waste Water Treatment Plant Drying Beds, FTK-011 and Sludge Lagoons, FTK-010	FTKX10 and FTKX-11
Oct-95	Sverdrup	Final	RCRA Facility Investigation for the WWTP Filter Press Building FTKX-012	FTKX-12
Apr-96	Dames & Moore	Final	Report Spring Survey and Initial Background Spring Monitoring	
Sep-96	SAIC	Final	Phase II RCRA Facility Investigation Work Plan for SWMU FTKX-21 Spent Solvent Storage Area	FTKX-21
Sep-96	SAIC	Final	Final Phase II RCRA Facility Investigation Work Plan for Solid Waste Management Unit Group #2 SWMU FTK-022 Former Pesticide Rinse Tank Site	FTKX-22
Sep-96	SAIC	Final	Final Phase II RFI Work Plan SWMUG #2 SWMU FTK-31,32,33,35,38	
Jan-97	Sverdrup	Final	RCRA Facility Investigation Work Plan for the Fire Fighter Training Area (SWMU # FTK-024)	FTKX-24
Jan-97	Sverdrup	Final	Final Addendum RCRA Facility Investigation Work Plan Sitewide Soil Background Level Investigation	
Feb-97	Halliburton NUS	Final	Resource Conservation and Recovery Act Evnironmental Sampling Plan for Open Burning/Open Detonation Unit at Fort Knox	FTKX-29
Apr-97	SAIC	Final	UXO Support Services and Geophysical Surveys	FTKX-30
May-97	Dames & Moore	Final	Work Plan Sitewide Karst Groundwater Assessment (Phase I)	Karst
Jul-97	SAIC	Final	Sampling and Analysis Plan for Preliminary Spring Sampling	Karst
Dec-97	SAIC	Final	Phase II RCRA Facility Investigation Work Plan for Solid Waste Management Unit Group 2 SWMU FTK-040 The Underground Storage Tank (UST) Site 1473-A	FTKX-40
Jan-98	Dames & Moore	Final	Report Conduit Groundwater Study	Karst
Jan-98	Sverdrup	Final	Confirmatory Sampling Anderson and Lindsey Golf Course Pesticide Mixing Pads	FTKX-41A and FTKX-41L
Apr-98	Sverdrup	Final	Final Report, Sitewide Soil Background Level Investigation	
Jun-98	SAIC	Final	Sitewide Karst Groundwater Assessment Report Phase I Activities	Karst
Jul-98	SAIC	Draft	Work Plan for the Ordnance and Explosives Characterization, Tioga Springs EOD Site SWMU FTK-30	FTKX-30

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PREVIOUS STUDIES TABLE 1, continued

Date	Contractor	Draft/Final	Name of Action	Site
Aug-98	Sverdrup	Draft	Draft RCRA Facility Investigation for the Firefighter Training Area SWMU FTK-024	FTKX-24
Sep-98	IT	Final	Interim Removal of Soil From Former Pesticide Mixing Pads SMUG # 7	FTKX-41A and FTKX-41L
Sep-98	IT	Final	Interim Removal of Soils Former Pesticide Mixing Pads SWMUG #7 Sampling and Analysis Plan	FTKX-41A and FTKX-41L
Sep-98	IT	Final	Quality Assurance Report Construction of Construction Demolition (CD) Debris Landfill Phase II and III Permit # 047-00008	FTKX-02
Feb-99	Lockheed Martin	Final	Subpart X Permitting Support for the U.S. Army Armor Center and Fort Knox Trip Report for the Meeting On January 26 1999	FTKX-29
Mar-99	Dames & Moore	Final	Report Diffuse Groundwater Study	Karst
May-99	Sverdrup	Final	Review Summary of the Phase I RCRA Facility Investigation for the Waste Water Treatment Plant Filter Press Building FTKX-012	FTKX-12
Jun-99	Dames & Moore	Draft	Draft Work Plan Landfill Monitoring System Groundwater Study Phase II Residential Landfill	FTKX-02
Jul-99	IT	Final	Generator Waste Profile Sheet for Anderson Golf Course	FTK-41A
Jul-99	IT	Final	Generator Waste Profile Sheet for Lindsey Golf Course	FTK-41L
Jul-99	Dames & Moore	Final	Site-Specific Safety and Health Plan for Phase II Groundwater Investigation	Karst
Sep-99	Sverdrup	Final	Work Plan Confirmatory Sampling at Defense Reutilization and Marketing Office (DRMO)	FTK-020
Sep-99	Dames & Moore	Final	Draft Phase II Sitewide Karst Groundwater Assessment	Karst
Oct-99	SAIC	Final	Technical Memorandum for Fort Knox Pesticide Rinse Tank Site (FTK-022) and Maintenance Area Results of Historical Documents Evaluation and Passive Soil Gas Survey and Rational	FTKX-22
Oct-99	Dames & Moore	Final	Work Plan Sitewide Karst Groundwater Assessment (Phase II)	Karst
Nov-99	SAIC	Final	Site Wide Karst GW Assessment Report Phase II Activities.	Karst
Dec-99	IT	Final	Interim Removal of Soils Former Pesticide Mixing Pads	
Dec-99	Sverdrup	Final	Final Confirmatory Sampling Plan for the DRMO FTKX-020	FTKX-020
Dec-99	AimTech	Draft	Decontamination of the Burn Pans at the OB/OD Unit and the Proposed Geophysical Investigation	FTKX-29

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PREVIOUS STUDIES TABLE 1, continued

Date	Contractor	Draft/Final	Name of Action	Site
Jan-00	SAIC	Final	Phase II RFI Work Plan for FTFK-040 UST Site 1473-A	FTKX-40
Feb-00	SAIC	Draft	Phase III RCRA Facility Investigation SWMU FTK-022 Former Pesticide Rinse Tank	FTKX-22
Feb-00	Dames & Moore	Draft	Draft Groundwater Assessment Report Residential Landfill	FTKX-02
Feb-00	URS	Final	Groundwater Assessment Report	FTKX-02
Mar-00	Dames & Moore	Draft	Draft Report Landfill Monitoring System	FTKX-02
Apr-00	Sverdrup	Draft	Draft Phase I RCRA Facility Investigation for Oil/Water Separators SWMU FTKX-017	FTKX-17
Apr-00	SAIC	Final	Amendment to the Phase II RCRA Facility Investigation Work Plan SWMU FTKX-01 Closed Landfill	FTKX-01
Apr-00	SAIC	Final	Final Phase III RCRA Facility Investigation SWMU FTK-022 Former Pesticide Rinse Tank	FTKX-22
Apr-00	SAIC	Final	Final Phase II RCRA Facility Investigation for SMUG 2 Former Pesticide Rinse Tank FTKX-22	FTKX-22
Apr-00	SAIC	Final	Final Work Plan Amendment Phase III RFI of UST Site 1473-A SWMU FTK-040	FTKX-40
Apr-00	AimTech	Final	Subpart X Permitting Support for the U.S. Army Armor Center and Fort Knox Trip Report for the Shift III Activities From March 31, 200 to April 5, 2000.	FTKX-29
May-00	SAIC	Draft	Draft Groundwater Study	FTKX-02
May-00	Knox	Final	Groundwater and Surface Water Monitoring Sample Data Reporting Form	FTKX-01 and FTKX-02
May-00	SAIC	Final	Final Phase II RCRA Facility Investigation for SWMU FTKX-30 Tioga Springs EOD Site	FTKX-30
Jun-00	SAIC	Final	Final Phase II RFI for SMUG#2 Former Transformer Sites FTK-31,32,33,35,38	
Jun-00	In-House	Final	Public Notice, Tentative Approval of Closure Plan, Crumb Range	FTKX-29
Aug-00	Jacobs	Final	Chemical Data Quality Report for the Groundwater Investigation Phase II Residential Landfill	FTKX-02
Aug-00	SAIC	Draft	Phase III RCRA Facility Investigation Work Plan SWMU FTK-038 Transformer Storage Site	FTKX-38
Aug-00	Jacobs	Final	Phase I RCRA Facility Investigation Report Waste Water Treatment Plant, Two Central Washracks, FTKX-018	FTKX-18
Aug-00	Jacobs	Final	Final Phase I RCRA Facility Investigation Waste Water Treatment Plant Sludge Lagoons FTK-010 and Sludge Drying Beds FTK-011	FTKX-10 and FTKX-11

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PREVIOUS STUDIES TABLE 1, continued

Date	Contractor	Draft/Final	Name of Action	Site
Aug-00	Jacobs	Final	Final Report Phase I RCRA Facility Investigation Waste Water Treatment Plant Filter Press Building FTKX-012	FTKX-12
Sep-00	IT	Final	Soil Excavation Removal and Site Closure Bldg 5222 FTKX-16	FTKX-16
Sep-00	Jacobs	Draft	Phase IA RCRA Facility Investigation Work Plan for the Two Central Washracks FTKX-18	FTKX-18
Sep-00	SAIC	Final	Phase III RCRA Facility Investigation Site Safety and Health Plan SWMU FTK-030, Tioga Range EOD Site	FTKX-30
Oct-00	SAIC	Final	Phase II RCRA Facility Investigation for SWMU FTKX-01 Closed Landfill	FTKX-01
Oct-00	SAIC	Final	Phase III RCRA Facility Investigation Work Plan Addendum SWMU FTK-021, Spent Solvent Storage Area	FTKX-21
Oct-00	Jacobs	Draft	Draft Confirmatory Sampling Report for DRMO FTKX-20	FTKX-20
Nov-00	SAIC	Final	Phase III RCRA Facility Investigation Work Plan SWMU FTKX-30,Tioga EOD Site	FTKX-30
Nov-00	URS	Final	Groundwater Monitoring Plan	FTKX-02
Nov-00	IT	Final	Quality Assurance Report Constructionj of Constructiojn Demolition (CD) Debris Landfill Phase IV and V Permit # 047-00008	FTKX-02
Nov-00	URS	Final	Analytical Summary Second Quarter 2000 Groundwater Sampling Baseline Groundwater Sampling Event #1 Residential and C/DD Landfills	FTKX-01 and FTKX-02
Nov-00	URS	Final	Analytical Summary Third Quarter 2000 Groundwater Sampling Event #2 Residential and C/DD Landfills	FTKX-01 and FTKX-02
Dec-00	SAIC	Final	Final Work Plan, RCRA Facility Investigation (RFI) for the Former UST and Oil/Water Separators (OWS) at the DRMO	FTK-020
Dec-00	Jacobs	Final	Phase II RCRA Facility Investigation for the Waste Water Treatment Plant Sludge Lagoons FTK-10 and Sludge Drying Beds, FTKX-011	FTKX-10 and FTKX-11
Dec-00	URS	Final	Report Landfill Monitoring System Installation Groundwater Investigation Phase II Residential and C/DD Landfill	FTKX-02
Jan-01	URS	Final	Analytical Summary Fourth Quarter 2000 Groundwater Sampling Baseline Groundwater Sampling Event #3 Residential and C/DD Landfills	FTKX-01 and FTKX-02
Feb-01	Tetra Tech	Final	Sampling and Analysis Report to Support Closure of the Fort Knox OBOD Unit at Crumb Range FTKX-29	FTKX-29

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PREVIOUS STUDIES TABLE 1, continued

Date	Contractor	Draft/Final	Name of Action	Site
Mar-01	Jacobs	Final 2 Volumes	Final Phase I RCRA Facility Investigation for the Oil Water Separators FTK-017	FTKX-17
Apr-01	Tetra Tech	Final	Closure/Post Closure Plan for the OBOD Site Crumb Range FTKX-29	FTKX-29
Apr-01	SAIC	Draft	Phase III RCRA Facility Investigation Report for the Spent Solvent Storage Area FTKX-21	FTKX-21
Apr-01	IT	Final	Soil Excavation and Removal Interim Measures Transformer Storage Area Concrete Pad, Bldg 7331	FTKX-38
Apr-01	IT	Final	Soil Excavation and Removal Interim Measures Transformer Storage Paint Yard FTK-033	FTKX-33
Apr-01	IT	Final	Soil Excavation and Removal Interim Measures Transformer Storage Bldg 4019 FTK-035	FTKX-35
Apr-01	KDEP	Final	Thallium Split Sampling with KDEP Transformer Storage Area	FTKX-33
May-01	Knox	Final	Groundwater and Surface Water Monitoring Sample Data Reporting Form	FTKX-01 and FTKX-02
May-01	SAIC	Draft	Phase III RCRA Facility Investigation Work Plan Addendum Number 2 SWMU FTKX-021 Spent Solvent Storage Area	FTKX-21
Jul-01	Jacobs	Final	Work Plan Addendum Phase 1A RCRA Facility Investigation of the Two Central Washracks SWMU FTKX-18	FTKX-18
Jul-01	Jacobs	Final	Evaluation of IDW Report Wastewater Treatment Plant Former Sludge Lagoons FTKX-10 and Sludge Drying Beds FTKX-11	FTKX-10 and FTKX-11
Jul-01	Jacobs	Final	Work Plan Addendum Phase IA RCRA Facility Investigation of the Two Central Washracks FTKX-18	FTKX-18
Jul-01	Jacobs	Final	Investigative Derived Waste Disposal Summary for the Corrective Action Plan Development at UST Site 2730 FTKX-15B	FTKX-15B
Jul-01	Jacobs	Final	Investigative Derived Waste Disposal Summary for the Corrective Action Plan Development at DRMO, FTKX-044	FTKX-22
Jul-01	Jacobs	Final	Investigative Derived Waste Disposal Summary Report for the Pre-Corrective Action Plan Remedial Investigation at UST Site 2823	FTKX-15D
Jul-01	URS	Final	Analytical Summary Second Quarter 2001 Groundwater Sampling Baseline Groundwater Sampling Event #5 Residential and C/DD Landfills	FTKX-01 and FTKX-02
Aug-01	Jacobs	Final	Phase I RCRA Facility Investigation Report for Firefighter Training Area	FTKX-24

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PREVIOUS STUDIES TABLE 1, continued

Date	Contractor	Draft/Final	Name of Action	Site
Sep-01	Knox	Final	Groundwater and Surface Water Monitoring Sample Data Reporting Form	FTKX-01 and FTKX-02
Oct-01	URS	Final	Analytical Summary Third Quarter 2001 Groundwater Sampling Baseline Groundwater Sampling Event #6 Residentail and C/DD Landfills	FTKX-01 and FTKX-02
Oct-01	SAIC	Final	Phase II RCRA Facility Investigationh Quality Control Plan, SWMU FTK-024 Firefighter Training Area	FTKX-24
Oct-01	Jacobs	Final	Phase II RCRA Facility Investigation Addendum for the WWTP Filter Press Building FTKX-12	FTKX-12
Oct-01	URS	Final	Phase II Report Sitewide Groundwater Assessment	
Oct-01	Jacobs	Final	Final Phase II RFI Work Plan for the WWTP Filter Press Building FTK-012	FTKX-12
Nov-01	SAIC	Draft	Supplemental Work Plan Addendum Phase III RCRA Facility Investigation of UST Site 1473-A FTKX-40	FTKX-40
Nov-01	SAIC	Draft	Phase III RCRA Facility Investigation Work Plan Addendum SWMU FTKX-21 Spent Solvent Storage Area	FTKX-21
Nov-01	Jacobs	Draft	Draft Phase IA RFI Addendum at the Central Washracks SWMU FTK-018	FTKX-18
Dec-01	SAIC	Draft	Sitewide Fort Knox Risk Assessment Work Plan	Karst
Dec-01	URS	Final	Analytical Report for Residential and C/DD Landfill	FTKX-02
Jan-02	SAIC	Final	Addendum to Site Safety and Health Plan SWMU FTK-021, Spent Solvent Storage Area	FTK-21
Jan-02	URS	Final	Analytical Summary Fourth Quarter 2001 Groundwater Sampling Event #7 Residential Landfills	FTKX-02
Jan-02	URS	Final	Analytical Summary Fourth Quarter 2001 Groundwater Sampling Baseline Groundwater Sampling Event #7 Residential and C/DD Landfills	FTKX-01 and FTKX-02
Jan-02	SAIC	Final	Final Phase III RCRA Facility Investigation Work Plan Addendum SWMU FTKX-21 Spent solvent Storage Area	FTKX-21
Jan-02	SAIC	Final	Supplemental Work Plan Addendum Phase III RFI UST 1473-A SWMU-040	FTKX-40
Feb-02	Tetra Tech	Draft	Data Validation Report for Sept 2001 Preclosure Sampling for the OBOD Site Crumb Range, FTKX-29	FTKX-29

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PREVIOUS STUDIES TABLE 1, continued

Date	Contractor	Draft/Final	Name of Action	Site
Apr-02	SAIC	Final	Final Work Plan Phase II RCRA Facility Investigation, Firefighter Training Area, SWMU FTK-024	FTKX-24
Apr-02	IT	Final	Soil Excavation and Removal Interim Measures, Transformer Storage Paint Yard (FTK-33)	FTKX-33
Apr-02	IT	Final	Soil Excavation and Removal Interim Measures, Transformer Storage Building 4019 (FTK-35)	FTKX-35
Apr-02	IT	Final	Soil Excavation and Removal Interim Measures Report, Transformer Storage Area Concrete Pad, Building 7331 (FTK-038)	FTK-038
Apr-02	IT	Final	Interim Removal of Soils and Site Closure Building 5222 (FTKX-16Q)	FTKX-16
Apr-02	SAIC	Final	Site Wide Risk Assessment Work Plan Addendum for the Closed Landfill	FTKX-01
Apr-02	URS	Final	Figures and Boring Log Revisions Groundwater Monitoring Plan Residential Landfill and C/DD Landfill	FTKX-02
Apr-02	Knox	Final	Groundwater and Surface Water Monitoring Sample Data Reporting Form	FTKX-01 and FTKX-02
Jun-02	IT	Final	August 2001 Geoprobe Sampling and Proposed Approach for Open Sites Closure of Abandoned Gas-Line Distribution System	FTKX-39
Jul-02	Jacobs	Final	IDW Disposal Summary Report for DRMO	FTK-020
Jul-02	URS	Final	Analytical Summary Second Quarter 2002 Groundwater Sampling Baseline Groundwater Sampling Event #9 Residential and C/DD Landfills	FTKX-01 and FTKX-02
Aug-02	URS	Final	Analytical Report for Residential and C/DD Landfill	FTKX-02
Aug-02	SAIC	Final	Geophysical Investigation Plan for Digital Geophysical Mapping Operations Tioga EOD Site	FTKX-30
Sep-02	SAIC	Final	Environmental Information Management Plan (EIMP) Quality Control Plan for Fort Knox	EIMP
Sep-02	SAIC	Draft	Phase II RCRA Facility Investigation of the Firefighter Training Area SWMU FTKX-24	FTKX-24
Oct-02	IT	Draft	Sites 4 and 6 Site Investigation, Closed Abandoned Gas Line Distribution System	FTKX-39
Oct-02	SAIC	Draft	Draft Phase III RCRA Facility Investigation Work Plan Former Sludge Lagoons FTKX-10 and Sludge Drying Beds FTKX-11	FTKX-10 and FTKX-11
Oct-02	Jacobs	Final	Phase II RCRA Facility Investigation for the WWTP Filter Press Building SWMU FTKX-12	FTKX-12

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PREVIOUS STUDIES TABLE 1, continued

Date	Contractor	Draft/Final	Name of Action	Site
Oct-02	Jacobs	Final	Final Phase II RCRA Facility Investigation for the Wastewater Treatment Plant Filter Press Building SWMU FTK-012	FTKX-12
Oct-02	IT	Draft	Soil Excavation And Removal Interim Measures Site 102 FTKX-15A Work Plan	FTKX-15A
Oct-02	URS	Final	Analytical Summary Third Quarter 2002 Groundwater Sampling Event #10 Residential and CDD Landfills	FTKX-02
Oct-02	URS	Final	Analytical Summary Thrid Quarter 2001 Groundwater Sampling Baseline Groundwater Sampling Event #6 Residential and C/DD Landfill	FTKX-02
Oct-02	URS	Final	Analytical Summary Third Quarter 2002 Groundwater Sampling Baseline Groundwater Sampling Event #10 Residential and C/DD Landfills	FTKX-01 and FTKX-02
Nov-02	SAIC	Final	Supplemental Work on RFI Phase III Work plan Addendum SWMU FTK-021 Spent Solvent Storage Area	FTKX-21
Nov-02	SAIC	Draft	Sitewide Risk Assessment Work Plan Addendum for the Former Sludge Lagoons FTKX-10 and Sludge Drying Beds FTKX-11	FTKX-10 and FTKX-11
Nov-02	SAIC	Final	Supplemental Work on RFI Phase III Work Plan Addendum SWMU FTK-021 Spent Solvent Storage Area	FTKX-21
Dec-02	SAIC	Draft	Site-Specific Report for Digital Geophysical Mapping Operations Tioga Springs EOD Site	FTKX-30
Jan-03	SAIC	Final	Phase III RCRA Facility Investigation Work Plan Former Sludge Lagoons FTKX-10 and Sludge Drying Beds FTKX-11	FTKX-10 and FTKX-11
Jan-03	URS	Final	Analytical Summary Fourth Quarter 2002 Groundwater Sampling Baseline Groundwater Sampling Event #11 Residential and C/DD Landfills	FTKX-01 and FTKX-02
Jan-03	URS	Final	Fort Knox Residential and C/DD Landfill Groundwater Monitoring Fourth Quarter of 2002 (High and Low Flow Events) Analytical Reports	FTKX-02
Feb-03	AimTech	Final	Subpart X Permitting Support Resource Conservation And Recovery Act Preliminary Site Investigation Report	FTKX-29
Feb-03	Jacobs	Final	Phase II RCRA Facility Investigation Report for the Oil/Water Separators SWMU FTKX-017	FTKX-17
Mar-03	URS	Analytical Summary	September 2002 and October 2002 Groundwater Sampling, Baseline Sitewide Karst Groundwater Sampling Event #1 and Event #2	Karst

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PREVIOUS STUDIES TABLE 1, continued

Date	Contractor	Draft/Final	Name of Action	Site
Mar-03	URS	Analytical Summary	October 2002 Groundwater Sampling Baseline Sitewide Karst Groundwater Sampling	Karst
Apr-03	URS	Draft	Maintenance and Repair of Data Loggers and Weirs Phase III Sitewide Karst Ground Water Monitoring	Karst
Apr-03	Jacobs	Final	Chemical Data Quality Report for the Phase II Sitewide Karst GW Assessment	Karst
Apr-03	URS	Final	Analytical Summary Jan 2003 Goundwater Sampling Baseline Sitewide Karst Groundwater Sampling Event #3	Karst
Apr-03	URS	Final	Analytical Summary First Quarter 2003 Groundwater Sampling Baseline Groundwater Sampling Event # 12 Residential and C/DD Landfills	FTKX-01 and FTKX-02
Apr-03	URS	Final	Report, Maintenance and Repair of Data Loggers and Weirs, Phase III Sitewide Karst Groundwater Monitoring.	Karst
May-03	Nashville COE	Final	Letter Report for the Par 3 Anderson Golf Course	FTK-41A
Jul-03	URS	Final	Analytical Summary Second Quarter 2003 Groundwater Sampling Detection Groundwater Sampling Event #1 Residential and C/DD Landfills	FTKX-01 and FTKX-02
Jul-03	URS	Final	Fort Knox Residential anc C/DD Landfill Groundwater Monitoring Second Quarter 2003 (High and Low Flow Events) Analytical Reports	FTKX-02
Jul-03	URS	Final	Analytical Summary Second Quarter 2003 Groundwater Sampling Event #1 Residential and C/DD Landfill	FTKX-02
Aug-03	Engineering-Environment Management, Inc	Final	Closed, Transferring, and Transferred/Site Inventory Report	MMRP
Aug-03	SAIC	Draft	Phase III RFI Report for SWMU FTK-040, UST Site 1473-A	FTKX-40
Aug-03	IT	Final	Interim Removal of soils and Site Closure Bldg 5222, FTKX-16Q	FTKX-16
Aug-03	URS	Final	Site Wide Karst August 2003 Groundwater Sampling Event #5	Karst
Sep-03	SAIC	Draft	Addendum to Phase III RFI for the Spent Solvent Storage Area SWMU FTK-021	FTKX-21
Sep-03	Jacobs	Final	Final Supplemental Site Characterization Report for the DRMO SWMU FTK-044	FTKX-20
Oct-03	IT	Final	Soil Excavation and Removal Interim Measures Report Transformer Storage Paint Yard, FTKX-33	FTKX-33

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PREVIOUS STUDIES TABLE 1, continued

Date	Contractor	Draft/Final	Name of Action	Site
Oct-03	IT	Final	Soil Excavation and Removal Interim Measures Report Transformer Storage Bldg 4019, FTKX-35	FTKX-35
Oct-03	IT	Final	Soil Excavation and Removal Interim Measures Report Transformer Storage Area Concrete Pad Bldg 7331, FTKX-38	FTKX-38
Oct-03	SAIC	Final	Final Phase III RCRA Facility Investigation Report for the Former Pesticide Rinse Tank Site, FTKX-22	FTKX-22
Oct-03	SAIC	Draft	Work Plan Addition Groundwater Monitoring Phase III RFI UST Site 1473-A, FTK-040	FTKX-40
Oct-03	SAIC	Draft	Completion of Groundwater Evaluation Phase III RFI Work Plan SWMU FTK-021 Spent Solvent Storage Area	FTKX-21
Oct-03	Louisville COE	Final	Amendment To The Phase II RCRA Facility Investigation Work Plan, SWMU FTK-001, Closed Landfill Soil Gas Study	FTKX-01
Oct-03	URS	Final	Analytical Summary Third Quarter 2003 Groundwater Sampling Detection Groundwater Sampling Event #2 Residential and C/DD Landfills	FTKX-01 and FTKX-02
Oct-03	URS	Final	Analytical Summary August 2003 Groundwater Sampling Baseline Karst Groundwater Sampling Event #5	Karst
Oct-03	SAIC	Final	Quality Control Plan for the Human Health Risk Assessment and Characterization of Geophysical Anomalies at the Tioga Spring EOD Site (SWMU FTK - 30)	FTKX-30
Nov-03	SAIC	Final	Phase III RCRA Facility Investigation Report for SWMU FTK-001 Closed Landfill	FTKX-01
Nov-03	SAIC	Draft	Appendicies A Through H for the Phase III Facility Investigation Report for SWMU's FTK-010 and FTK-011 Former Sludge Lagoons and Sludge Drying Beds	FTKX-10 and FTK-011
Nov-03	SAIC	Draft	Phase III RCRA Facility Investigation Report for SWMU's FTK-010 and FTK-011: Former Sludge Lagoons and Sludge Drying Beds	FTKX-10 and FTK-011
Nov-03	SAIC	Final	Generator Waste Profile Sheets for Spent Solvent Storage Area	FTKX-21
Nov-03	AimTech	Final	Subpart X Permitting For the U.S. Army Armor Center and Fort Knox Trip Report for the Meeting on November 10, 1999.	FTKX-29
Dec-03	SAIC	Final	Corrective Measures Study FTK-001 Closed Landfill	FTKX-01
Dec-03	SAIC	Final	Work Plan for Additional Groundwater Monitoring Phase III RCRA Facility Investigation Underground Storage Tank Site 1473A SWMU FTK-040	FTKX-40

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PREVIOUS STUDIES TABLE 1, continued

Date	Contractor	Draft/Final	Name of Action	Site
Dec-03	SAIC	Final	Disposal of Investigative Derived Waste (IDW) Generated During RCRA Facility Investigations (RFIs) at Three Sites	FTKX-40, FTKX-21, FTKX-22
Dec-03	URS	Final	Year One Baseline Monitoring Report Sitewide Karst Groundwater Assessment	Karst
Jan-04	SAIC	Final	Environmental Information Management Plan (EIMP) Quality Control Plan for Fort Knox	EIMP
Jan-04	URS	Final	Analytical Summary Fourth Quarter 2003 Groundwater Sampling Detection Groudwater Sampling Event #3 Residential and C/DD Landfill	FTKX-02
Jan-04	URS	Final	Analytical Summary October 2003 Groundwater Sampling Baseline Sitewide Karst Groundwater Sampling Event #6	Karst
Feb-04	SAIC	Draft	Draft Corrective Measures Study Work Plan For Former Sludge Lagoons and Drying Beds	FTKX-10 and FTK-011
Feb-04	IT	Draft	Soil Excavation Removal and Site Closure Interim Measures Site 102 (FTKX-15A)	FTKX-15A
Feb-04	Jacobs	Draft	Draft Sampling and Analysis Plan Addendum Part 1	FTKX-15D
Feb-04	Jacobs	Draft	Draft Sampling and Analysis Plan Addendum Part 2	FTKX-15D
Feb-04	IT	Draft	Soil Excavation Removal Activities Interim Measures Transformer Storage Building T58, T59 and T60 (FTKX-031)	FTKX-31
Feb-04	IT	Draft	Closure of Abandoned Gas Line Distribution Systems	FTKX-39
Feb-04	SAIC	Final	Closure of Abandoned Gas Line Distribution Systems Closure Report Addendum, Site No. 6	FTKX-39
Feb-04	SAIC	Final	Closure of Abandoned Gas Line Distribution Systems Closure Report Addendum, Site No. 6	FTKX-39
Feb-04	IT	Draft	Soil Excavation and Removal Interim Measures Reports	FTKX-33
Feb-04	IT	Draft	Soil Excavation and Removal Interim Measures Reports	FTKX-35
Feb-04	IT	Draft	Soil Excavation and Removal Interim Measures Reports	FTKX-38
Mar-04	SAIC	Final	Phase II RCRA Facility Investigation of the Firefighter Training Area SWMU FTKX-24	FTKX-24
Apr-04	SAIC	Final	Phase III RCRA Facility Investigation Report for SWMU FTK-040: UST Site n1473-A	FTKX-40
Apr-04	SAIC	Draft	Additional Phase III Draft Work Plan Addendum for the Former Pesticide Rinse Tank (SWMU FTK-022)	FTKX-22
Apr-04	SAIC	Draft	2004 Wet Season-Dry Event Groundwater Sampling Groundwater Monitoring UST Site 1473-A (SWMU FTK-040)	FTKX-40

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PREVIOUS STUDIES TABLE 1, continued

Date	Contractor	Draft/Final	Name of Action	Site
Apr-04	SAIC	Draft	Well Installation Details and Results of the 2004 Wet Season-Dry Event Groundwater Sampling, Completion of Groundwater Evaluation in Phase III RFI Project, Spent Solvent Storage Area (SWMU FTK-021)	FTKX-21
Dec-04	Jacobs	Final	Phase II RCRA Facility Investigation for the Waste Water Treatment Plant Sludge Lagoons FTK-10 and Sludge Drying Beds, FTKX-011	FTKX-10 and FTK-011

2005 IAP

Fort Knox
Active ER,A
Site Descriptions

CLOSED LANDFILL (9TH AND WILSON)
FTKX-01

SITE DESCRIPTION

The Closed Landfill is located at the southwest side of the intersection of 9th Avenue and Wilson Road. This landfill covers an area of 14.1 acres with a depth between two and 30 ft with a calculated volume of 300,500 cubic yards.

The landfill was used for solid waste disposal and was operated during the 1940s. The solid waste managed at this site includes undifferentiated wood, paper and metals, incinerator ash, and hospital trash. Cinders collected from coal fired heating units were mixed with the cover soil to provide more volume and soil stabilization.

The Landfill is located over a large broad oval shaped sinkhole. Some leachate has been noted in a spring near the southeast corner of the landfill (Satan's Cave). However, groundwater has been traced to Rushing Spring.

This landfill was closed in 1950 and has been partially graded and covered with gravel. The landfill has no leachate collection system, no bottom liner, and a non-engineered one-to two-ft clay cap. It is currently being used as a parking lot and once a year as a fairground area. It is also used as a training area (drivers training). The site is identified as Solid Waste Management Unit in SWMU-G 1 in the installation RCRA Part B Permit, signed 21 Jan 1997.

The Phase I RFI report submitted in 1991 identified the need for further investigation. Phase II RFI fieldwork completed in FY97 (contaminants of concern were identified). In FY98 the draft Phase II RFI Report was submitted to the state. Phase II identified the necessity to characterize the landfill contents to assess GW impact and determine volume of waste material. In FY99 the installation received regulator comments on Phase II RFI Report and started Phase III RFI/BRA to determine leachate impact to GW, volume and characteristics of waste material, and GW flow path. In FY00 the installation submitted the final Phase II report and performed the Phase III RFI/BRA Field Work. The final Phase III RFI Report was submitted in Nov 2003. Approval to proceed with CMS received in April 2004.

Site Description continues next page

STATUS

RRSE RATING: High

REGULATORY: RCRA

CONTAMINANTS:
VOCs, SVOCs, Metals

MEDIA OF CONCERN:
Groundwater, Sediment, Soil, Surface Water

COMPLETED IRP PHASE: RFA, CS, RFI (Phase III including Human Health and Ecological Baseline Risk Assessment), CMS, DES

CURRENT IRP PHASE: CMI(C)

FUTURE IRP PHASE: CMI(O)

PROPOSED PLAN

The selected remedy in the CMS consists of a 12-inch clay cap with 12-inch vegetated layer and a passive landfill-gas collection system using a 12-inch gas collection layer. Land use and groundwater restrictions will be implemented.

The LTM includes eight monitoring wells and two springs (Rushing Spring and Satan's Cave) will be sampled every year for five years beginning after the installation of the cap and then monitored every five years thereafter. The groundwater/spring samples will be analyzed for VOCs, SVOCs, and metals.

Surface water will be sampled after the installation of the cap at the same interval. Three surface water samples will be collected and analyzed for VOCs, SVOCs, and metals. A sediment sample (from Rushing Spring) will be sampled at the same interval as groundwater and analyzed for VOCs, SVOCs, and metals.

The decision to continue groundwater/spring monitoring/surface water sampling/sediment sampling, reduce the sampling schedule or analyte list, or take additional action would be made at the conclusion of the fifth monitoring event. Methane will be monitored annually at the soil gas vent stacks and monitoring wells.

LAND USE CONTROLS: Assumption is that this site will be used for recreational purposes.

RESIDENTIAL LANDFILL
FTKX-02

SITE DESCRIPTION

FTKX-02 is located north of the cantonment area bounded by Baker Road on the north and by Brandenburg Station Road on the west. The residential landfill has two components: the lower landfill, which was used from 1953 until November 1984, is of trench and fill construction, and comprises the entire landfill footprint; and the overlying area-type lined landfill was used from 1984 until 1992 and covered approximately 2/3 of the lower trench and fill landfill. Both landfills were used for disposal of residential and installation solid waste asbestos, construction debris, large inert objects, POL (petroleum, oil, lubricant) contaminated soil, grit and grease, rinsed empty pesticide containers, infectious/ pathological wastes (bandages, dressing, glass, metal, dead animals, sewage treatment plant sludge, and pentachlorophenol (PCP) treated wood). The residential landfill is overlain by a newly constructed Construction/Demolition Debris (C/DD) Landfill in the northeastern portion of the residential landfill. The combined landfills occupy approximately 285 acres of permitted area with 42 acres of residential waste and 27.4 acres of construction/demolition debris waste. The site was investigated to assess the potential for groundwater contamination from the underlying, pre-1984 trench-type landfill.

STATUS

RRSE RATING: High

REGULATORY: RCRA

CONTAMINANTS: Metals, VOCs

MEDIA OF CONCERN: Groundwater

COMPLETED IRP PHASE: RFA, CS (Phase I Groundwater Assessment), RFI (FY02 - Phase II Groundwater Assessment)

CURRENT IRP PHASE: RIP With LTM

FUTURE IRP PHASE: RIP With LTM

This site is identified as a Solid Waste Management Unit in SWMU-G 3 in the installation, RCRA Part B Permit signed 21 Jan 1997. The initial groundwater monitoring system consisted of five monitoring wells installed around the landfill. First quarter sample analysis in 1993 indicated contamination in one of the five wells; the contaminants were lead and benzene. A groundwater assessment plan, including a dye trace study and the construction of new wells, was implemented. Dye trace work plans were approved and the Commonwealth of Kentucky issued a permit to allow placement of a C/D Debris Landfill over a portion of the old landfill. In FY98 the state approved the final Conduit Flow Study (dye tracing) report and reviewed the draft Diffuse Flow Study (monitoring well) report. In FY98, a sinkhole at the landfill was entered in an unsuccessful attempt to locate a suitable groundwater monitoring point beneath the landfill and Appendix IX groundwater sampling was performed as a follow-up to the Diffuse Flow Study. In FY99, a conduit mapping report was submitted and the installation of a new groundwater monitoring system consisting of six wells (all five old wells were decommissioned) was completed. In FY00, the final Groundwater Monitoring Plan was submitted and baseline groundwater characterization was initiated. In FY01, the final Well Installation and Decommissioning Report was submitted as well as the first through fifth quarterly monitoring letters.

In FY02, KDEP approved the Groundwater monitoring plan with the stipulation that monitoring be increased to semi-quarterly to accommodate high and low flow conditions each quarter. The evaluation of eight base line monitoring events indicated no significant issues with organic contaminants of concern but did identify significant background issues with metals and indicator parameters. Consequently, Fort Knox requested an extension of the baseline period by eight events to characterize those influences. Six monitoring events were conducted in FY02 and eight events in FY03. Activities accomplished in FY04 included two baseline monitoring events (and associated quarterly reporting to KDEP), a base line summary report, and six detection-mode monitoring events.

Site Description continues next page

PROPOSED PLAN

This site is considered RIP. Subsequent years (FY05-FY35) will involve continued long term monitoring on a detection-mode basis as required for the C/DD landfill permit unless some indication of impact is identified. Contracting is in place for monitoring through the first quarter of FY05.

The monitoring program is contingent upon state acceptance of natural background influence on concentrations of metals and general chemistry (indicator parameters) in the groundwater.

WWTP SLUDGE LAGOONS (2)
FTKX-10

SITE DESCRIPTION

The Wastewater Treatment Former Sludge Lagoons are located approximately 500 feet to the southeast of the Fort Knox Sewage Treatment Plant.

The two former lagoons are approximately 150 ft by 200 ft and three to ten feet deep. The volume of the lagoons is approximately 18,500 cubic yards. The lagoons received sewer sludge from throughout the installation from 1942 to 1960. The lagoons are inactive.

Improper disposal of petroleum, chemicals, solvents, pesticides, and other compounds directly into the lagoons via sewer outfalls or direct discharge into lagoons is suspected to have resulted in the release of contaminants into the lagoon surface waters and sediments. The lagoons are not lined.

The nearest surface water body is a stream, approximately three-quarters of a mile Southeast east of the site, which drains into Mill Creek. The western-most lagoon was filled in with C/DD during 1980. The site is identified as a Solid Waste Management Unit in SWMU-G 2 of the installation RCRA Part B Permit signed 21 Jan 1997.

STATUS

RRSE RATING: High

REGULATORY: RCRA

CONTAMINANTS: Metals, SVOCs (PAHs), Pesticides, PCBs

MEDIA OF CONCERN: Soil

COMPLETED IRP PHASE: RFA, CS, RFI (Phase I-III), CMS

CURRENT IRP PHASE: CMS, DES, CMI(C)

FUTURE IRP PHASE: CMI(C), LTM

In FY99 the Draft Phase I (A) RFI report was submitted to the state for review. The RFI Phase IA draft report recommended a Phase II RFI. The installation submitted the Final Phase I RFI Report and Draft Phase II RFI Work Plan in FY00. The field work for Phase II was completed in FY01. The Phase II RFI Report was finalized in 1st QTR of FY02. The draft report noted contamination found and recommended additional sampling of the soil in the release areas located at the southern end of the lagoons and at isolated locations along the access roadway to further characterize the site.

The Draft Phase III report was submitted in Nov 2003. The Draft CMS was submitted in FY04. As a result of comments from KDEP on the Draft Phase III RFI Report additional Phase III Field Work was performed in FY04.

PROPOSED PLAN

In FY05 the Final Phase III RFI Report and Draft and Final CMS will be completed. Remedial Design is planned for FY05. CMI will consist of excavation of approximately 25,000 cubic yards of sludge and construction debris; disposal of materials at an off-post disposal facility; and backfill and regrade the remaining site so that it will drain properly.

UST SITE 2823 INVESTIGATION/REMEDIATION
FTKX-15D

SITE DESCRIPTION

Site 2823 is a former one-acre vehicle fueling area operated from the 1930s until 1986. The site contained a 5,000-gallon gasoline UST and a 5,000-gallon diesel UST. Both USTs were removed in June 1990 and a closure report was filed with the state. The site is regulated under the state UST program.

The site was completely paved over with 12-inch thick concrete hard stand in 1998 for use as a tank maintenance facility. Given its central location within an approximate 20-acre hardstand, and being at a topographic high, there is no groundwater recharge at this site. Groundwater may be present as a perched condition.

There is no evidence of contaminant migration. There are seven wells at the site, each 30 to 40 feet deep. An initial site investigation was completed in 1993, indicating BTEX contamination in subsurface soils and groundwater. Additional investigation in FY00 included the collection of chemical and soil biological data as part of the Pre-Corrective Action Plan (Pre-CAP). Results confirm no migration of the plume and indicate that biodegradation is occurring and that oxygen injection in the soils is very difficult. An additional round of sampling of all site wells and submittal of the Draft Corrective Action Plan (CAP) was completed in FY04.

STATUS

RRSE RATING: High

REGULATORY: CERCLA

CONTAMINANTS: BTEX, PAHs, Lead

MEDIA OF CONCERN: Groundwater, Subsurface Soil

COMPLETED IRP PHASE: PA, SI

CURRENT IRP PHASE: RI/FS, RD, RA(C), LTM

FUTURE IRP PHASE: LTM (Monitored Natural Attenuation)

PROPOSED PLAN

A final Corrective Action Plan will be completed in FY05. MNA with enhanced biodegradation is anticipated (168 DPT oxygen injection). Quarterly monitoring of seven wells and one spring is anticipated for one year, annual monitoring for four years.

DRMO FORMER WASTE OIL TANK SITE
FTK-020

SITE DESCRIPTION

DRMO former waste oil tank is located in the vicinity of Building 2952 near the intersection of Brandenburg Station Road and Frazier Road in a site used by DRMO as a salvage yard. Aerial photographs indicate that the site was used as early as 1964 as a storage yard for Army vehicles, scrap metals, shell casings, and drums. A storage building (Bldg 2953) was constructed in 1969. In 1970, the site was transferred to DLA and operated as a DRMO Storage Yard. Other buildings include an office building (Bldg 2962) and two warehouses (Bldgs 2951 and 2952) constructed during 1973. Sometime between 1973 to 1984, the eastern portion of the upper northern portions of the site was paved using asphalt. In 1984, a Hazardous Waste Storage Building (Bldg 2949) and a bermed concrete pad were constructed in the western quarter of the site. A Hazardous Materials Storage Building (Bldg 2947) was constructed in the western portion of the site in 1996.

The 1986 RFA identified the site as containing SWMUs, and in 1999 the entire DRMO facility was assigned SWMU FTKX-044. SWMUs located within the DRMO facility include:

- **SWMU FTKX-019** – Former DRMO Hazardous Waste Storage Area (NFA, as described in text for FTKX-019)
- **FTK-020** – also designated as FTKX-015C, Former DRMO Waste Oil Tank Site
- **FTKX-017N** – an oil/water separator (see text for FTKX-017)
- **FTKX-017BD** – an oil/water separator associated with FTK-020 (see text for FTKX-017)
- **FTKX-032** – Transformer Storage Building 2953 (NFA, as described in text for FTKX-032)

The site formerly contained a 12,000-gallon UST that stored waste oil. The RFA recommended that the tank be removed and the site cleaned up. Accordingly, the tank and associated oil/water separator (FTKX-017BD) were reportedly removed in July 1990. At the time of removal, the UST was heavily corroded and extensive contamination was noted in the excavation zone. Five site investigations (most UST-focused) have been conducted. Investigations suggest that surface drainage flows into a karst window southwest of the site. Currently elevated levels of grease and oil persist in the soil at depths greater than 30 feet. Soil and groundwater samples collected from the site have indicated the presence of petroleum hydrocarbons, metals, and PAHs. No single definitive source for contamination has been identified and there may be multiple sources contributing to contamination on-site. State regulations require further investigation to define horizontal and vertical extent of contamination before remediation measures are implemented.

The FY97 Draft Site Investigation report recommends a RCRA Facility Investigation due to multiple contaminant concerns. Due to the types of contamination this site, the site was removed from UST regulatory requirements and picked up as a RCRA regulated SWMU in FY99 and assigned SWMU number FTKX-44. FTKX-44 will be assigned

Site Description continues next page

STATUS

RRSE RATING: High

REGULATORY: RCRA

CONTAMINANT: Metals, PAHs, Petroleum Hydrocarbons

MEDIA OF CONCERN: Groundwater, Soil

COMPLETED IRP PHASE: RFA, CS, RFI (FY02 - confirmatory sampling)

CURRENT IRP PHASE: RFI

FUTURE IRP PHASE: RFI, LTM

SITE DESCRIPTION, continued

as an alias site in the AEDB-R database. The site is now regulated under the RCRA Part B Permit signed 21 January 1997. Confirmatory Sampling field work was performed in FY00. The Confirmatory Sampling Report was submitted in FY01. The Final Confirmatory Sampling Report was submitted in FY03. RFI Work Plan was submitted in FY04. The RFI fieldwork began in FY04.

PROPOSED PLAN

The RFI fieldwork will be completed and the Draft Phase II RFI Report will be submitted in FY05. A Baseline Risk Assessment may be required in FY05 with LTM to follow.

BOATWRIGHT MAINTENANCE AREA NEAR BLDG. 2775 FTKX-21

SITE DESCRIPTION

The spent solvent storage area is a fenced and bermed, concrete pad approximately 2,500 square feet in size, with a self-contained drainage system. This system consists of a catch basin and an oil-water separator.

Waste chemicals such as TCE, sodium hydroxide, lubrication fluid and acids were stored in drums at this location. The site is located at the Boatwright Maintenance Area, south of Frazier Road, next to Building 2782. A forested area is located approximately 100 feet to the north of Frazier road. Effluent from the oil-water separator is discharged through a storm drain, which passes under Frazier road into the forested area. Spent solvent storage was discontinued at this site in 1987.

This site is part of the RCRA Part B Permit signed 21 January 1997. The Phase I RCRA Facility Investigation has been completed. The Phase II RFI fieldwork (sampling for soil and sediment) has also been completed. The Draft report was submitted to the state in FY98, and recommended no further action. In February 2000, the state furnished comments on the Phase II Draft Report and requested additional sampling. In FY01 the Final Phase II RFI Report was submitted and the additional sampling was performed as a Phase III RFI. The Draft Phase III RFI Report was submitted in FY02. VOCs and metals contamination have been found in deep subsurface soil. TCE and PCE have been detected in groundwater beneath the site. Additional Phase III groundwater characterization was conducted in FY03-04 to determine the extent of contamination.

STATUS

RRSE RATING: High

REGULATORY: RCRA

CONTAMINANTS: Metals, VOCs

MEDIA OF CONCERN: Surface and Subsurface Soil, Groundwater

COMPLETED IRP PHASE: RFA, CS, RFI (Phase I & II)

CURRENT IRP PHASE: RFI (Phase III)

FUTURE IRP PHASE: CMS, DES, CMI(C), LTM

PROPOSED PLAN

The RFI fieldwork will be completed and the Draft Phase III RFI Report Addendum will be submitted in FY05. A Final Phase III RFI Report will be completed.

A Risk Assessment of the site may be conducted. A follow-on CMS may be performed with the Installation goal of managing the site risk using industrial standards and land use controls. Additional remedial action (possible limited source removal) may be required.

BLDG. T-112 UST PESTICIDE
FTKX-22

SITE DESCRIPTION

This site consists of a 4,000-gallon underground Pesticide Rinse Tank (removed) and Building 112. The site served as a rinse area for Fort Knox pesticide distribution vehicles and equipment from early 1970s to 1988. Prior to its use as a pesticide or rodenticide mixing facility, Building 112 was an automotive maintenance and repair facility.

The area surrounding the pesticide rinse tank area includes a heavy equipment maintenance shop to the north, with warehouses and offices to the west and south. Mixing and formulation of insecticide and rodenticide solutions were performed in Building 112. The mixing sink in Building 112 drained into the 4,000 gallon underground storage tank. The storage tank also received rinse water from empty containers. The rinse water was then used as a diluent with chlordane for use in termite treatment under slab foundations.

The tank was removed in October 1988 as part of closure activities. Observations during excavation of the tank indicated it was in good condition, but that the appurtenances were in need of repair. Excavated soil from the tank pit was analyzed and found to contain chlordane from 6.5 to 536.6 ug/kg, prompting over excavation and removal of 180 cubic yards of potentially contaminated soil. The tank site was certified closed in 1993. During the closure process of the tank, groundwater samples from monitoring wells, located around Building 112, were analyzed. The analysis revealed that chlorinated volatile organic constituents were present in the groundwater and may be associated with prior maintenance activities at Building 112. Further investigation was required to determine the source and extent of contamination. The Report for the Phase I RFI (which included the installation of four wells) identified the presence of impacted soil and groundwater and recommended a RFI Phase II.

The Phase II RFI fieldwork was completed and the Final Phase II RFI report submitted to state in FY99. It recommended a Phase III RFI to identify the source of TCE. Dye tracing conducted as part of the post-wide groundwater study indicates that groundwater flows to the Dry Branch Springs on Otter Creek and has shallow flow toward the east to Gold Vault Spring. Phase III RFI Field Work was started in FY00 and completed in FY01 and included microgravity geophysical study, the installation of six more monitoring wells, 15 direct-push sampling points (to delineate nature and extent), and groundwater sampling of all existing wells.

The Draft Phase III RFI Report was submitted in April 2001. This site is part of the RCRA Part B Permit signed 21 January 1998. The hydrological setting of the site is complicated by clay overburden and karst bedrock conditions. Furthermore, historic TCE concentrations have been at levels where DNAPL is likely. The site is in a highly developed area of the post, with numerous buildings and paved areas. Because of these factors, conventional remediation approaches (e.g., dig and haul, pump and treat, SVE) are not likely to be feasible. Phase III sampling indicated a reduction in TCE concentrations in the groundwater by an order of magnitude. A small area of TCE contaminated groundwater with concentrations above MCLs still exists. The Final Phase III RFI report was submitted in October 2003. Comments were received in Jan 04 from KDEP, indicating the need for further investigation. Additional Phase III characterization (including groundwater) began in FY04.

Site Description continues next page

STATUS

RRSE RATING: High

REGULATORY: RCRA

CONTAMINANT: Metals, VOCs, Pesticides

MEDIA OF CONCERN: Groundwater, Soil

COMPLETED IRP PHASE: RFA, CS, RFI (FY02 - Phase III Final Report; FY03 - Phase III)

CURRENT IRP PHASE: RFI

FUTURE IRP PHASE: CMS, LTM

BLDG. T-112 UST PESTICIDE, *continued*
FTKX-22

PROPOSED PLAN

As a result of the final Phase III Report, KDEP has mandated source identification. The Phase III RFI Report Addendum will be submitted in FY05. A Risk Assessment and/or CMS may be required. The risk management strategy will focus on monitoring the potential receptor locations (nearby springs) and the source area (at monitoring wells). Should the TCE concentrations at these locations continue to diminish (and the spring concentrations are below a risk-based level), then no additional action other than Long Term Monitoring may be necessary. The monitoring program is anticipated to consist of two years of quarterly sampling, followed by 17 years of annual sampling.

FIRE FIGHTER TRAINING AREA
FTKX-24

SITE DESCRIPTION

The Fire Fighter Training Area is located on the West side of Godman Airfield. This unit consists of a concrete burn pad approximately 12,000 square feet in size with curbed edge that drains to an oil-water separator.

This unit burned unstable JP-4 fuel for the purpose of training firefighting personnel from 1965 until 1990. The oil-water separator is operable but not in use. EMD has advised that the area not be reused as a Fire Fighter Training Area.

The RFA recommended that the stained soil be cleaned up. This site is regulated under the installation RCRA Part B Permit signed 21 January 1997. The Phase I RFI field work (16 borings located in and around the pad) has been completed. The Draft report was submitted in FY98 and recommended a Phase II RFI to better define the nature and extent of contamination. State comments of the second quarter of FY01 concurred with the need for Phase II to further characterize the site.

STATUS

RRSE RATING: Medium

REGULATORY: RCRA

CONTAMINANTS: Metals, PAHs

MEDIA OF CONCERN: Soil

COMPLETED IRP PHASE: RFA, CS, RFI (FY02 - Phase II)

CURRENT IRP PHASE: RFI

FUTURE IRP PHASE: DES, CMI(C)

A Phase II RFI was initiated during the 1st QTR of FY02. Field work was completed in the 2nd QTR of FY02; soil samples were collected to further characterize the site with respect to metals, PAHs and dioxin contaminants. The draft report was submitted in FY02 for review. The Final Phase II RFI Report was submitted in March 2004. A modified Tier I Risk Assessment was performed in FY04.

PROPOSED PLAN

Based on the assumption that groundwater is not of concern, a limited dig and haul action is expected to achieve a NFA.

TIOGA SPRINGS EOD SITE
FTKX-30

SITE DESCRIPTION

The Tioga Springs EOD site is located 3 miles north of the Fort Knox cantonment area of Fort Knox in the northwest portion of the reservation. It consists of an area of 1,000 feet by 1,000 feet. A portion of the area was used for training, while the remainder served as a firebreak.

This area served as an EOD facility only when Crumb Range site was inaccessible. It was primarily used for OB/OD of small arms ammunition and occasional grenades and smoke ordnance although three 500-lb training bombs were encountered at the site through RFI activities. It had a 1kg detonation limit.

EOD personnel indicate that approximately 10,000 kg of explosive material and 1.4 kg of tear and smoke agents were disposed of during 1980 - 1981. A total of 700 kg is reportedly the typical annual disposal amount, with 9,316 kg related to aged bulk ordnance that was detonated. The site has no interim status to operate in accordance with state hazardous waste regulations. This site has not been in operation since 1982. No beginning date for site use is currently available.

STATUS

RRSE RATING: High

REGULATORY: RCRA

CONTAMINANTS: Metals, UXO

MEDIA OF CONCERN: Surface and Subsurface Soil

COMPLETED IRP PHASE: RFA, CS, RFI (Phase III RFI and Tier II Human Risk Assessment)

CURRENT IRP PHASE: DES, CMI(C)

FUTURE IRP PHASE: RC

The site is identified as SWMU number FTKX-30 in the installation RCRA Part B Permit signed 21 January 1997. Phase I RCRA Facility Investigation (RFI) completed in 1992 indicated the presence of metals contamination. Phase I RFI required a Phase II RFI.

Phase II RFI fieldwork completed in 1997 identified 10 geophysical survey anomalies. Surface soil sampling detected nitro aromatics and metals above background levels. The Phase II RFI report was submitted to the state in FY98 which recommended Phase III RFI with ordnance investigation and baseline risk assessment. The FY99 characterization of anomalies identified some UXO and OE related scrap metal.

In FY00 the Phase III RFI began to characterize metals in surface, subsurface soils, and sediment. An additional geophysical survey was performed around the site perimeter. A recent survey located UXO in areas beyond that previously defined as the operational area. The project is split into two parts: the OEW removal and the HTW activity. The HTW phase includes the clean-up of the OE actions and the added support of the additional residual removal. Groundwater assessment is deferred pending subsurface soil evaluation. A draft Phase III RFI report has been submitted for regulator review.

In FY03, an expanded digital geophysical mapping event was completed which focused on locating UXO in two areas at the perimeter of the site and along the site access road. The State has made comments on the Draft Phase III RFI report. A revised report was submitted in FY04. A Human Health Risk Assessment (HHRA) has been done. A Work Plan to re-acquire and excavate significant geophysical anomalies is being prepared. A CMS began in FY04.

Site Description continues next page

PROPOSED PLAN

RFI and HHRA results indicate a limited removal of surface soils may be necessary. A future DES and CMI action is anticipated to occur (hot spot removal).

UST 1473-A SITE CLOSURE
FTKX-40

SITE DESCRIPTION

SWMU site 1473-A is located within the Fort Knox cantonment area, southeast of the intersection of Bullion Blvd. and Chaffee Ave. The approximately ½-acre site was part of a former gasoline fueling station that contained a 10,000-gallon underground storage tank.

The tank was installed in 1947 and used until 1986. There was a nearby 2,000-gallon tank, designated as 1473B that contained diesel fuel. The USTs were removed in July 1992. Site 1473-A is vacant and predominantly covered with grass. A railroad track is located 50 feet northeast of the former UST location and an asphalt drive is located immediately southwest of the site. Several underground utilities are located along the railroad right-of-way. Surface drainage flows west to tributary of Dry Branch Creek. Soil at this site does not pose a risk.

The KY UST Branch was regulating the tank removal until the analysis indicated that chlorinated solvents contaminated the contents of the tank. This site is regulated under the installation RCRA Part B Permit signed 21 January 1997.

STATUS

RRSE RATING: High

REGULATORY: RCRA

CONTAMINANTS: BTEX

MEDIA OF CONCERN: Groundwater

COMPLETED IRP PHASE: RFA, CS, RFI (FY02 - Phase III)

CURRENT IRP PHASE: LTM

FUTURE IRP PHASE: LTM

The Phase I RCRA Facility Investigation (RFI) – consisting of one groundwater monitoring well and approximately four soil borings – indicated that VOCs and metals were present in the soil and groundwater.

The Phase II RFI field work was completed in FY98 and consisted of four groundwater monitoring wells. The Draft report was submitted to the state in FY99 and recommended a Phase III RFI to determine the nature and extent of contamination and the potential for natural attenuation at the site.

In FY00, the Final Phase II Report was submitted and the Phase III RFI Field Work was performed. Finding from the Phase III RFI indicates that BTEX is present in groundwater at levels greater than KDEP standards. The Draft Phase III RFI Report was submitted in FY03. Comments were received from KDEP in FY04.

PROPOSED PLAN

In FY05 groundwater monitoring for the RFI completed and a Phase III RFI Report Addendum submitted. Long term monitoring for compliance with risk management strategy.

2005 IAP

Fort Knox Response Complete Site Descriptions

STEAM GENERATION INCINERATOR
FTKX-03

SITE DESCRIPTION

FTKX-03 was located in Building 7203, between Ninth Avenue and the Sewage Treatment Plant. This incinerator was designed to provide heating for buildings on the installation by burning solid waste. It has been dismantled and removed. The conclusion of the RFA was that no further investigation was required at that time. The site is identified as a Solid Waste Management Unit FTKX-03 in the installation RCRA Part B Permit signed 21 Jan 1997.

No further action at this time and no action planned under the IRP.

STATUS

RRSE RATING: Not Evaluated

CONTAMINANTS: None

MEDIA OF CONCERN: Air, Soil

COMPLETED IRP PHASE: RFA

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 198902

BOILER USED TO BURN CLASSIFIED WASTE
FTKX-04

SITE DESCRIPTION

FTKX-04 was located in Building 17, off of Bullion Boulevard. This boiler, which is no longer in operation, burned between 1,200 to 1,400 pounds of classified waste per week. The conclusion of the RFA was that no further investigation was required at that time. This site was closed October 1995. The site is identified as a Solid Waste Management Unit FTKX-004 in the installation RCRA Part B Permit signed 21 Jan 1997.

No further action at this time and no action planned under the IRP.

STATUS

RRSE RATING: Not Evaluated

CONTAMINANTS: None

MEDIA OF CONCERN: Air, Soil

COMPLETED IRP PHASE: RFA

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 198902

CLASSIFIED DOCUMENT INCINERATOR
FTKX-05

SITE DESCRIPTION

FTKX-05 is located at Building 848, off of Ireland Avenue. This incinerator, with a rated capacity of 320 pounds per hour, is fenced and locked but has no overhead cover. The function of incinerator was to burn classified wastes. The incinerator was in operation from 1976 until it was taken out of service in 1994. The incinerator operates as it is needed (has not been operated in the past year) and burns paper, microfiche, and acetate overlays. The Criminal Investigation Division has also used this unit on occasion to burn confiscated drugs. There have been releases in the way of air emissions, which are to be included in the revised air permit. There is some evidence of previous spillage of small quantities of ash from the incinerator. The conclusion of the RFA was that no further action was required at that time. However, depending on the types of wastes burned in the incinerator, the ash may require a hazardous waste determination to be done. The site is identified has a Solid Waste Management Unit FTKX-005 in the installation RCRA Part B Permit signed 21 Jan 1997.

No further action at this time and no action planned under the IRP.

STATUS

RRSE RATING: Not Evaluated

CONTAMINANTS: VOCs, SVOCs

MEDIA OF CONCERN: Air, Soil

COMPLETED IRP PHASE: RFA

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 198902

PATHOLOGICAL INCINERATOR - IRELAND USACH
FTKX-06

SITE DESCRIPTION

FTKX-06 was an incinerator located inside the Ireland Army Hospital, Building 851. This incinerator, rated at 100 pounds per hour of pathological (Type 4) waste, had the function to burn 150 pounds per week of infectious and pathological waste from the hospital. This unit is no longer in operation. The incinerator has been dismantled and removed from the hospital. The RFA recommended no further action. The site is identified as a Solid Waste Management Unit FTKX-006 in the installation RCRA Part B Permit signed 21 Jan 1997.

No further action at this time and no action planned under the IRP.

STATUS

RRSE RATING: Not Evaluated

CONTAMINANTS: VOCs, SVOCs

MEDIA OF CONCERN: Air, Soil

COMPLETED IRP PHASE: RFA

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 198902

PATH INCINERATOR - BUILDING T-1068
FTKX-07

SITE DESCRIPTION

FTKX-07 was located at Building T-1068. This incinerator, rated at 100 pounds per hour of pathological (Type 4) waste, had the function to burn approximately 40 pounds of pathological waste per week. This unit is no longer in operation. The incinerator has been dismantled and removed from Building T-1068. The RFA recommended no further action. This site is identified as a Solid Waste Management Unit FTKX-007 in the installation RCRA Part B Permit signed 21 Jan 1997.

No further action at this time and no action planned under the IRP.

STATUS

RRSE RATING: Not Evaluated

CONTAMINANTS: VOCs, SVOCs

MEDIA OF CONCERN: Air, Soil

COMPLETED IRP PHASE: RFA

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 198902

PATHOLOGICAL INCINERATOR BLDG 847
FTK-008

SITE DESCRIPTION

FTK-008 is a Consummate Model C-75 incinerator located at Building 847, off of Ireland Avenue. This incinerator, rated capacity of 280 pounds per hour of pathological (type 4) waste, was used from 1977 to 1994 to burn Type 1 and Type 4 waste generated by the hospital and the Veterinary Clinic. The average amount of waste burned in the incinerator per day was between 140 and 150 pounds. Ash from the unit was placed in an adjacent dumpster and was tested for TCLP metals prior to off-post landfill disposal. The conclusion of the RFA was that a RFI was required. It was moved to the no further action list 16 Oct 1995. This site is identified as Solid Waste Management Unit FTKX-008 in the installation RCRA Part B Permit signed 21 Jan 1997.

Moved to the no further action list 16 Oct 1995 and no action planned under the IRP.

STATUS

RRSE RATING: Not Evaluated

CONTAMINANTS: VOCs, SVOCs

MEDIA OF CONCERN: Soil

COMPLETED IRP PHASE: RFA

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 199510

WASTEWATER TREATMENT PLANT
FTKX-09

SITE DESCRIPTION

FTKX-09 is located off Ninth Avenue. From 1942 until November 1995 it performed secondary treatment of wastewater from Fort Knox and the city of Muldraugh. The average daily wastewater flow to the plant was about 4.0 MGD, the vast majority of that being sanitary. There have been no reported releases. The RFA recommended no further action. Various facilities at the site are covered separately under other SWMUs; these are the Drying Beds, Lagoons and Filter Press Building. This site is identified as a Solid Waste Management Unit FTKX-009 in the installation RCRA Part B Permit signed 21 Jan 1997.

No further action is required and no action planned under the IRP. Compliance with KPDES permit is required at this site.

STATUS

RRSE RATING: Not Evaluated

CONTAMINANTS: Metals

MEDIA OF CONCERN: Soil, Groundwater

COMPLETED IRP PHASE: RFA

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 198902

17 WWTP SLUDGE DRYING BEDS
FTK-011

SITE DESCRIPTION

The 17 WWTP Sludge Drying Beds are located at the existing domestic WWTP, off of Ninth Avenue in the east-central portion of the cantonment are of Fort Knox Military Reservation. The WWTP is isolated and enclosed by chain link fencing. The 17 sludge-drying beds have a total area of approximately 34,000 square feet.

The drying beds occupy an area which was once a former lagoon. They have been used since 1960 to dewater domestic sludge generated at the WWTP. The drying beds currently service the new WWTP that has been operational since November 1995. A number of improvements were made to the drying beds in 1987, the most significant of which was the addition of a graded sand filter and leachate effluent recovery system. Sludge is transported from the WWTP by underground pipeline and dispersed to each of the beds on a rotating basis. Leachate effluent is collected in underground pipes and routed to a sump where the effluent is pumped to the WWTP for treatment.

STATUS

RRSE RATING: Medium

CONTAMINANTS: Metals, SVOCs (PAHs)

MEDIA OF CONCERN: Soil

COMPLETED PHASE: RFA, RFI (Phase I & II - OMA funding)

CURRENT PHASE: RFI (Phase III - OMA funding)

FUTURE PHASE: CMI (FY05), LTM (FY06 to FY15) (OMA funding)

RC DATE: 198902

Dry sludge is tested for TCLP metals prior to off-post disposal. The site is identified as a Solid Waste Management Unit Group (SWMU-G 4) in the installation, RCRA Part B Permit signed 21 Jan 1997. The RFA recommended no further action, however, a RFI is required by the Fort Knox RCRA Part B Permit Corrective Action Modification. EPR number for funding purposes for this project is KNOX960036.

Phase I RFI fieldwork has been completed and a draft report of the Phase I RFI was submitted to the state for review and comments in Jan 1999. Comments for Phase I RFI were received by Fort Knox in FY00 and resolved. The installation submitted Final Phase I RFI Report and Draft Phase II RFI work plan to the state in FY00.

The FY02 Phase II RFI Report indicated that metals, arsenic and iron impacted the soil but that the impact to the soil is random. The Draft Phase III RFI Report was submitted in November 2003. Comments from KDEP on this resulted in additional Phase III RFI Field Work performed in FY04.

PROPOSED PLAN

In FY05, the Final Phase III RFI Report and Draft and Final CMS will be submitted. The CMI is anticipated to consist of excavation of metals-impacted soils in the upper two feet of the hillside. The estimated volume of soil to be excavated is 800 cubic yards. CMI LTM for ten years would be required if the groundwater is found to be impacted from the beds.

WWTP FILTER PRESS BLDG
FTKX-12

SITE DESCRIPTION

The Filter Press Building was part of the previous domestic WWTP facility that was removed from operation in 1995. This site was in operation from 1970 until November 1995. The previous and current WWTP facility are at the same location which is east of Ninth Avenue in the east-central portion of the cantonment area of Fort Knox Military Reservation. The WWTP facility is isolated and enclosed by chain-link fencing.

This unit was a continuous cloth vacuum filter with a drying drum 12 feet in diameter. The function of this unit was to remove moisture from the WWTP plant sludge. Sludge was deposited on a concrete pad and or on the ground.

The conclusion of the RFA was that a RFI is required; also, the Part B Modification includes this site and requires a RFI. The site is identified as part of Solid Waste Management Unit Group (SWMU-G) 4 in the installation RCRA Part B Permit signed 21 Jan 1997. For funding consideration, this site is an active site and therefore not eligible for ER,A funding. EPR project number for funding purposes is KNOX960044.

STATUS

RRSE RATING: Medium

CONTAMINANTS: PAHs, Pesticides, Metals

MEDIA OF CONCERN: Soil

COMPLETED PHASE: RFA, RFI (Phase I & II - OMA funding)

CURRENT PHASE: RFI (Phase III - OMA funding)

FUTURE PHASE: RC (FY05)

RC DATE: 198902

The Phase I RFI fieldwork was completed August 1996 and a draft report of the Phase I RFI submitted to the state in FY99 for review and comments. Comments were received by Fort Knox in FY00 and resolved.

A Phase II RFI to further characterize the site was completed in FY01. A Phase II RFI to further characterize the site was completed in FY03. Final Phase III RFI submitted to the state for review in FY04.

PROPOSED PLAN

Anticipated future actions include Phase II RFI and followed by No Further Action designation. CMI activities have been awarded under a Pre-placed Remedial Action Contract (PRAC) through the Corp of Engineers, Louisville District.

WWTP 3 LIME SLUDGE LAGOONS MULDRAUGH FTKX-13

SITE DESCRIPTION

FTKX-13 is an active site located just west of the Muldraugh Water Plant. The three lagoons hold the lime sludge from the treatment of groundwater for drinking water purposes. The lagoons are approximately 1.5 to 2 acres in area and about 25 feet deep at their deepest point. The site is identified as a Solid Waste Management Unit FTKX-13 (A to C) in the installation RCRA Part B Permit signed 21 Jan 1997. The RFA recommended no further action. No further action is required at this time, however installation must maintain compliance with KPDES permit.

No further action required and no further action is planned for this site under the IRP. Compliance with KPDES permit will still remain a requirement.

STATUS

RRSE RATING: Not Evaluated
CONTAMINANTS: None
MEDIA OF CONCERN: None
COMPLETED IRP PHASE: RFA
CURRENT IRP PHASE: RC
FUTURE IRP PHASE: RC
RC DATE: 198902

4 WATER TREAT. PLANT LIME SLUDGE LAGOONS FTK-014

SITE DESCRIPTION

FTK-014 is located adjacent to the landfill off of Baker Road. These four man-made holding basins receive lime sludge from the treatment of surface water at the Central Water Plant and hold the lime until it is dry and can be removed for disposal. Each lagoon has an area of less than an acre and is clay lined. The RFA recommended no further action. The site is identified as a Solid Waste Management Unit FTK-014 (A to D) in the installation RCRA Part B Permit signed 21 Jan 1997. This site was moved to the no further action list 19 Oct 1995.

No further action required and no further action planned for this site under the IRP.

STATUS

RRSE RATING: Not Evaluated
CONTAMINANTS: Lime Sludge (metals, alkalinity)
MEDIA OF CONCERN: Groundwater, Soil, Surface Water
COMPLETED IRP PHASE: RFA
CURRENT IRP PHASE: RC
FUTURE IRP PHASE: RC
RC DATE: 199510

MULTIPLE UST SITES
FTKX-15

SITE DESCRIPTION

FTKX-15 sites are located at various locations throughout the Fort Knox Cantonment area. The function of these units is storage. All of these tanks should be leak tested and corrective action should be taken to clean up those sites determined to have had leaking tanks. The Part B Permit Modification includes these units and states that, at the request of the Director, a unit characterization, which consists of testing the sites for TCLP waste numbers D001 through D043, may be required. These sites are part of the RCRA Part B Permit Modification. This multiple UST site project was broken down into separate sites: FTKX-15A, FTKX-15B, and FTKX-15D. Site FTKX-15C was combined with FTKX-20 since they are the same site.

Responses addressed under FTKX-15A, FTKX-15B, and FTKX-15D.

STATUS

RRSE RATING: See Separate Sites

CONTAMINANTS: POL, Heavy Metals

MEDIA OF CONCERN: Soil, Groundwater

COMPLETED IRP PHASE: RFA (EPR Number KNOX940020)

CURRENT IRP PHASE: See Separate Sites

FUTURE IRP PHASE: All future phases for this site will be accomplished under: FTKX-15A, FTKX-15B, and FTKX-15D.

UST & PIPELINE REMOVALS AT BLDG. 102
FTKX-15A

SITE DESCRIPTION

Site 102 is located at the northwest corner of Dixie Street and Eleventh Ave. The majority of the site is concrete paved, with exception of the former tank area. A maintenance building is located to the north. The area is fenced and heavily trafficked.

The tank excavation pit at the site formerly contained four steel underground storage tanks that reportedly were installed in 1971. Two of the USTs in the East Side of the pit stored gasoline and were removed in 1990. The other two USTs located on the West side of the tank pit stored #2 diesel fuel and were removed in Jan 1992. Roughly 507 lineal feet of piping and approximately 125 cubic yards of soil were removed from the excavation along with the USTs.

Confirmatory sampling of the UST excavation pit revealed PAHs in the soil of the East wall. This Site is regulated under the state UST regulations. A Draft Confirmation Study (CS) was submitted to the state for review in FY98. In FY00 the state recommended removal of lead contaminated soils. In FY01 the site was put on hold for approximately eight months due to the lack of a state regulator to review projects. Additional time was lost because the site was moved from the UST Branch to the Division of Waste Management.

The FY03 Work Plan was submitted to the state for review. Approximately 20 cubic yards of contaminated soil was removed and disposed of offsite. The installation expects to receive no further action in FY04.

STATUS

RRSE RATING: Low

CONTAMINANTS: BTEX, Lead

MEDIA OF CONCERN: Soil

COMPLETED IRP PHASE: RFA (CS Field Work and Draft Report), RFI, CMI

CURRENT IRP PHASE: CMI (FY03)

FUTURE IRP PHASE: RC

RC DATE: 200307

USTs BURK MOTOR PARK BLDG. 2730
FTKX-15B

SITE DESCRIPTION

Burk Motor Park is located north of Spearhead Loop Road and Brave Rifles Regiment Ave. The facility was built in 1986 and is utilized as a vehicle/tank maintenance work area and park area. A chain-link fence encloses the primarily concrete paved facility. A maintenance building is located at the eastern most side of the site. Four pump islands and four fiberglass composite underground storage tanks (USTs) were within a gravel area located along the northern fence line of the facility. Three of the tanks contained diesel fuel and the remaining tank contained gasoline.

A diesel fuel release of unknown quantity occurred from the piping of one of the tanks in 1992. These islands and USTs were removed in 1996.

STATUS

RRSE RATING: High

CONTAMINANTS: PAHs

MEDIA OF CONCERN: Groundwater

COMPLETED IRP PHASE: RFA, CS (ESA 1993 Ogden)

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 198902

Although the USTs have been removed, the SWMU is not technically eligible for DERA funding and therefore will be funded with OMA ECAP funds. EPR Project number KNOX960049 is the funding source for this project. The UST site is being closed according to regulations of the state UST program.

CS fieldwork was completed in FY97. In FY98, the Draft CS Report was submitted to the state for review, recommending quarterly monitoring; the state concurred with the recommendation. Four quarters of data were collected from 4th QTR FY00 to 1st QTR FY02. The data indicated no contamination above action levels. The report presenting data and recommending no further action was submitted to the state in 2nd QTR FY02.

The report submitted to the state presented results of four quarters of monitoring and recommendation in FY04 for no further action.

MULTIPLE ABOVE GROUND STORAGE TANKS
FTKX-16

SITE DESCRIPTION

The Multiple Above Ground Storage Tank site is located throughout the Fort Knox cantonment area. The function of these units is storage of POL and used oil.

During the RFA, evidence of contamination was found requiring further investigation. A letter received in October 1995 from the Kentucky Division of Waste Management stated that only one AST site, Building 5222, required further action. The tank was removed 15 April 1997 and is therefore not eligible for DERA funding. The state identified this site as SWMU FTKX-16Q in Appendix A-1 of the Hazardous Waste Facility Permit (KY6-210-020-470).

Following cleaning and disposal of the tank, an area of visibly impacted soils 20' by 20' and 36" deep was excavated and soils disposed at a permitted landfill. Notable soils discoloration and petroleum odor was observed in soils remaining on the north wall of the excavation, adjacent to storm water drain. A sample of sediment in the storm water drain adjacent to the north wall was collected. Two samples of the sediment material around the storm water drainpipe were also collected to determine if the sediment material served as a migration pathway of potential contaminants away from the AST area.

Analytical results for the sediment samples indicated elevated levels of several PAH compounds and metals. One PAH compound slightly exceeded the allowable levels in one of the samples. As a result, additional excavation, removal, and disposal of soils was accomplished in FY00. In FY01 the CMI activity was completed and recommended no further action to the state.

The revised report was submitted to the state in FY03. No further field work is required. The installation expects NFA after state review.

STATUS

RRSE RATING: Medium

CONTAMINANTS: PAHs, Metals

MEDIA OF CONCERN: Soil, Groundwater

COMPLETED IRP PHASE: RFA, Confirmatory Sampling, FY01: Interim Measures. Additional soil excavation along storm water conduit with confirmatory sampling.

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 199802

MULTIPLE OIL/WATER SEPARATORS
FTKX-17

SITE DESCRIPTION

The fifty-two Oil Water Separator (OWS) sites at Fort Knox are identified as SWMUs and are listed in the Fort Knox RCRA Part B Permit (signed 21 Jan 1997) by the general designation SWMU #FTKX-017. Each of the 52 OWS units is identified specifically by the following designations: SWMU #FTKX-017A through Z (excluding J and Y), FTKX-017AA through AZ (excluding AE, AX, AY, and AZ), and FTKX-017BA through BF, inclusive. The function of each OWS is to remove petroleum, oil, or lubricant (POL) products from waste and storm waters. Forty-nine of the OWS units discharge effluent to the ground surface and the remaining three OWS units discharge effluent to the sanitary sewer system of Fort Knox. These are active sites and therefore not eligible for ER,A funding. The EPR Project Number for this project is KNOX960050.

STATUS

RRSE RATING: Medium

CONTAMINANTS: SVOCs, Metals

MEDIA OF CONCERN: Soil, Sediment, Groundwater

COMPLETED PHASE: RFA, RFI (Phase I - OMA Funding)

CURRENT PHASE: RFI (Phase II - OMA funding)

FUTURE PHASE: RC (FY05)

RC DATE: 198902

The majority of the OWS units are located in industrial settings and service one or more of the following military facilities: wash racks, wash pads, outdoor maintenance areas, fueling points, underground fuel storage areas, POL storage areas, and general storm drainage. These OWS sites typically are enclosed by chain-link fencing that may be locked and are not readily accessible to the general public. The OWS units have been in operation beginning from as early as 1978 (DRMO facility) to as recently as 1990 (Yano multi-purpose range complex) and generally have remained in operation until the present with the following exceptions noted. OWS FTKX-017BD was removed during July 1990 as part of an underground waste oil tank removal at the Defense Reutilization and Marketing Office (DRMO) facility. OWS FTKX-017A was relocated during August 1996 from a location south of Heard Motor Park along Ninth Calvary Regiment Avenue to the Carpenter Test Area. Ten OWS units (FTKX-017B, C, D, E, F, L, AC, AN, AU, and BA) were removed during the spring of 1998 as part of decommissioning select small wash rack facilities and, in the case of OWS 017AN, the abandonment of a Fort Knox Service Station.

Recommendations of the 1989 RFA were to determine if these OWS units are functioning properly and to investigate releases of hazardous constituents to the environment. It was also suggested that a regular maintenance schedule be established for active SWMU sites to prevent future releases. A RFI, Phase I was performed at each of the OWS sites to evaluate if soil had been impacted by the operation of the OWS unit. Fieldwork of Phase I of the RFI was completed in FY96 and a draft RFI, Phase I report was submitted to the state for review in FY00.

The Phase I RFI report noted that soil at the ground surface along the drainage pathway (at or down gradient of the effluent discharge point) was found to be impacted at 45 of the OWS sites and recommended a Phase II RFI be performed to further characterize the OWS site. Comments to the Phase I RFI report were received from the state in FY00. It was agreed that responses to the comments be incorporated in the work plans for Phase II of the RFI. A Phase II of the RFI has been implemented in FY01 to further investigate the OWS sites where impacted surficial soil remains and where defective OWS units remain in place. Further characterization occurred in the Phase II RFI Report (including risk screening) and was submitted to the state in FY03. Limited soil removal action will be completed in FY04. Final report summarizing the status of the sites will be submitted in FY05. Expect that the excavation and risk screening will result in a NFA at 15 sites in FY05. Six additional sites could receive a NFA based on the soil excavation activities and remaining 28 sites have some risk but a Conditional NFA would be pursued to close out the sites under the RCRA permit. A management plan will be developed for the OWS operations.

2 CENTRAL WASH RACKS
FTK-018

SITE DESCRIPTION

Each of the central wash rack (CWR) facilities is considered a SWMU in accordance with the RCRA Part B Permit signed 21 January 1997. One CWR is located at the northwest corner of the intersection of Wilson and Frazier Roads in the north-central portion of the cantonment area and the other CWR is located east and adjacent to Dorretts Run Road in the east-central portion of the cantonment area. Each of these SWMUs is a closed system consisting of a concrete-paved wash down area, a divided sediment basin (approximately 375 feet long by 110 feet wide), an oil-water separator unit, and a make-up pond.

These facilities, in operation since 1984, are used to clean tracked vehicles returning from the training areas and firing ranges. The RFA recommended no further action; however, a RFI is required by the installation RCRA Part B Permit. These two SWMUs are still active and listed as such in the RCRA Part B permit. Both sites are OMA funded because they are active sites.

STATUS

RRSE RATING: Medium

CONTAMINANT: Metals

MEDIA OF CONCERN: Soil, Sediment, Groundwater

COMPLETED IRP PHASE: RFA, RFI (OMA funding)

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 198902

In August 1996, the Phase I RFI field work was completed. The draft report was submitted to the state in FY99. The draft report recommended no further action for each SWMU pending favorable results of a Phase IA RFI designed to characterize the sediment in the CWRs. The Final Phase I RFI Report was submitted in FY00. Phase IA RFI field work was performed in FY01; no contamination was found above action levels. The Draft Phase IA Report was submitted to the state in 1st QTR FY02 recommending no further action. It is anticipated that a no further action status will be issued by the state in FY04.

No further phases are anticipated. The Phase IA RFI (in which the sediment in the sedimentation basins was sampled and analyzed) indicates concentrations of constituents detected in the sediment are less than screening criteria. Therefore, a no further action status has been requested and is expected from the state in FY04.

FORMER DRMO HW STG AREA
FTKX-19

SITE DESCRIPTION

Former hazardous waste storage area is located at DRMO, near Building 2962. This area, consisting of 20,000 square feet, was used to store hazardous waste packed into containers. This unit was closed on 10 September 1986. A sampling plan for the area was outlined in the RCRA Part B Permit, Closure and Post Closure Plan. The RFA determined that no further action is required.

The State recommended no further action for this site. No action is planned under the IRP.

STATUS

RRSE RATING: Not Evaluated
CONTAMINANTS: Hazardous Waste
MEDIA OF CONCERN: Soil, Groundwater
COMPLETED IRP PHASE: RFA
CURRENT IRP PHASE: RC
FUTURE IRP PHASE: RC
RC DATE: 198902

PCP TRANSFORMER STORAGE AREA T-6
FTKX-23

SITE DESCRIPTION

Transformer storage building is located at Building T-6, off of Park Road. This building, covering 4,800 square feet, is used to store transformers until their PCB content is determined and they are removed for final disposition. This unit has been in operation from late 1984 until present. The RFA recommended no further action. This site is part of the RCRA Part B Permit signed 21 January 1997.

The site is still used to store transformers and various other PCB containing materials. No further action is required at this time, however once the site is closed the state can request a Phase I RCRA Facility Investigation.

STATUS

RRSE RATING: Not Evaluated
CONTAMINANT: PCB
MEDIA OF CONCERN: None
COMPLETED IRP PHASE: RFA
CURRENT IRP PHASE: RC
FUTURE IRP PHASE: RC
RC DATE: 198902

RAD HOS WST STG AREA BUNKER 1070
FTKX-25

SITE DESCRIPTION

The Radioactive Hospital Storage Bunker is located at Building 1070, off of J Street. This building, covering 300 square feet, has been used from 1974 to present to store radioactive medical waste. The specific waste stored at this site is C-14 "Bactec" waste, I-125 waste, and small amounts of Technitium, Gallium, and Indium. The RFA indicated that no further action was required at that time. This site is part of the RCRA Part B Permit signed 21 January 1997.

The site is still active and no response action is planned under the IRP.

STATUS

RRSE RATING: Not Evaluated

CONTAMINANTS: C-14 "Bactec", I-125, Technitium, Gallium, Indium

MEDIA OF CONCERN: Soil, Groundwater

COMPLETED IRP PHASE: RFA

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 198902

HOSPITAL SILVER RECOVERY OPERATION
FTKX-26

SITE DESCRIPTION

The Hospital Silver Recovery Operation is located at Ireland Army Hospital, Building 851. This active unit recovers silver from spent x-ray fixer solution. There was no evidence of any problems related to this operation during RFA inspection. The RFA recommended no further action. This site is part of the RCRA Part B Permit dated 21 January 1997.

The site is still an active site and no action is planned under the IRP.

STATUS

RRSE RATING: Not Evaluated

CONTAMINANT: None

MEDIA OF CONCERN: None

COMPLETED IRP PHASE: RFA

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 198902

DENTAL CLINIC SILVER RECOVERY OPERATION FTKX-27

SITE DESCRIPTION

The Dental Clinic Silver Recovery Operations are made up of three sites located at the Margetis Dental Clinic (Building 6289), Nelson Dental Clinic (Building 5949) and DENTAC #5 (Building 2724). These inactive silver recovery units were used for retrieving silver from the spent x-ray fixer solution. The fixer solution is now collected and taken to the Hospital Silver Recovery unit. The RFA recommended no further action. This site is part of RCRA Part B Permit signed 21 January 1997.

The installation received a no further action status from the state and no action is planned under the IRP.

STATUS

RRSE RATING: Not Evaluated

CONTAMINANTS: None

MEDIA OF CONCERN: Soil, Groundwater

COMPLETED IRP PHASE: RFA

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 198902

PHOTOGRAPHIC LAB SILVER RECOVERY FTKX-28

SITE DESCRIPTION

The Photographic Laboratory Silver Recovery Operation is located in Building 1227, between Sixth and Seventh Avenues. This active SWMU is an ion exchange silver recovery unit with a 5-gallon continuous flow capacity. The system removed silver from spent photographic fixer solution. It has been in operation since 1983. The RFA recommended no further action. This site is part of the RCRA Part B Permit signed 21 January 1997.

The site is active and no action is planned under the IRP.

STATUS

RRSE RATING: Not Evaluated

CONTAMINANT: None

MEDIA OF CONCERN: None

COMPLETED IRP PHASE: RFA

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 198902

CRUMB RANGE EOD SITE
FTKX-29

SITE DESCRIPTION

The Crumb Range EOD Site is located in the south central portion of the installation. The site was used as an explosive ordnance demolition disposal area from 1983 until 1991. The entire site is 300 feet by 400 feet (2.75 acres).

Prior to OB/OD operations the area was used as a tank firing range. Within this area is a burn pit that measures approximately 15 feet by 50 feet by 6 feet. The remaining adjacent area was used for open detonation activities. Two burn pans are located within this area and were used once.

Specific wastes that were managed were small arms ammunition, machine gun ammunition, mortar rounds, 105 mm tank rounds, artillery rounds, hand, rifle, and smoke grenade; and excess propellant bags for artillery. Interim status was achieved on 8 November 1988 with the filing of a Part B, Subpart X Permit application. Fort Knox's RCRA Part B Permit, signed 21 January 1997, includes this site. Subpart X application will be withdrawn at a future date making this a RCRA permit closure. This site will require the development and implementation of a RCRA closure plan.

The site is currently inactive and not ER,A eligible for funding. Phase I of the Kentucky Division of Waste Management approved Environmental Sampling Plan for FY00. Phase I implementation consisted of excavation of the trench and soil screening, soil sampling, reburning of small arms ammunition, dismantling of the burn pans and a karst hydrogeology walkover, a geophysical survey, and disposal of 475,880 lbs of lead contaminated soil. Data gathered from the sampling plan implementation will be used to develop and implement a RCRA closure and post closure care plan, which will consist of investigation/ remediation of the geophysical anomalies identified in the survey.

Closure Plan completed with a certification of closure received from KDEP.

STATUS

RRSE RATING: Medium

CONTAMINANT: Arsenic, Lead, Mercury and compounds (inorganic), Barium and compounds, Cadmium and compounds, Chromium III, Chromium VI and compounds, 1,4-Dinitrotoluene, 2,6-Dinitrotoluene, Hexahydro-1,3,5-trinitro-1,3,5-triazine, 2,4,6-Trinitrotoluene.

MEDIA OF CONCERN: Soil

COMPLETED PHASE: RFA (EPR Number KNO-89-S3), Withdraw Part B Subpart X Application, RFI, CMI

CURRENT PHASE: RC

FUTURE PHASE: RC

RC DATE: 198902

FORMER TRANSFORMER STG BLD 58, 59, 60
FTKX-31

SITE DESCRIPTION

The Transformer storage sites 58, 59, and 60 are adjoining structures located along Quartermaster Street in the southwest quadrant of Fort Knox. Railway tracks are located to the east of buildings. Warehouses and office buildings are located to the west. Out-of-service transformers were stored both inside and outside of these buildings until 1978. From 1978 to 1981, only non-PCB transformers were stored in this area. This former storage area includes a concrete slab that is reportedly the site of repeated spills of dielectric fluid.

The site is included in the RCRA Part B Permit signed 21 January 1997, SMUG 2. The Phase I RFI was completed and results recommended a Phase II RFI. The Phase II RFI field work has been completed. The Draft report was submitted to the state in FY99 and recommended no further action. In February 2000 the state furnished comments on the Phase II Draft RFI report and recommended a Baseline Risk Assessment for multiple transformer storage sites. In FY01 a request was sent to the state requesting no further action.

No further action at this time and no action planned under the IRP.

STATUS

RRSE RATING: High

CONTAMINANTS: None

MEDIA OF CONCERN: Soil

COMPLETED IRP PHASE: RFA, RFI

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 200309

FORMER TRANSFORMER STG BLD 2953
FTKX-32

SITE DESCRIPTION

The Transformer Storage Building 2953 is located south of Frazier road in the northwest quadrant of Fort Knox. This building is situated within the salvage yard of the Defense Reutilization and Marketing Organization Area.

The site consists of a building, 25 x 100 feet, and an outside lot, approximately 50 x 50 feet. Transformers were stored at the outside lot from 1978 to 1980. Beginning in 1980, the transformers were placed on pallets and stored inside the building. The site is included in the RCRA Part B Permit Modification as part of SMUG 2. The Phase I RFI is completed, which recommended a Phase II RFI. The Phase II RFI fieldwork has been completed. The Draft report was submitted to the state in FY99 and recommended no further action. In February 2000 the state furnished comments on the Phase II RFI Report and requested additional work to determine the extent of contamination, plus a Baseline Risk Assessment.

Site is now carried as part of FTKX-20.

STATUS

RRSE RATING: High

CONTAMINANT: None

MEDIA OF CONCERN: Soil

COMPLETED IRP PHASE: RFA, RFI (Phase I RFI and Phase II RFI Field Work and Draft Report)

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 199903

FORMER TRANSFORMER STG PAINT SHOP YD
FTKX-33

SITE DESCRIPTION

The Transformer Storage area at the paint shop yard is adjacent to Building 171, off of Maxwell Street. This transformer storage area, having a fenced enclosure of 160 x 160 feet, was used from 1978 to 1984. A fenced area for storage of non-PCB containing transformers, other industrial equipment and pipes is located on the south side of Building 171.

Results of the RFI (Phase I) confirmed PCB contamination requiring a RFI (Phase II) to define the vertical and horizontal extent of PCB contamination. The Phase I RFI recommended a RFI Phase II. The Phase II RFI fieldwork completed in FY98. The Draft report was submitted to the state and recommends a Phase III RFI with risk assessment and cleanup of site. This site is included in the RCRA Part B Permit signed 21 January 1997, SMUG 2. In February 2000 the state furnished comments on the Phase II RFI Report and requested additional work to determine the extent of contamination, plus a Baseline Risk Assessment. A recent site visit identified a new transformer storage area (100 feet x 100 feet) with visible stained soil to be incorporated into FTKX-33. FY99 Corrective Measures Study and Implementation (CMI) funded and started. The FY01 corrective measures Implementation field activities were completed and consisted of excavation and off-site disposal of 1000 cubic yards of TSCA-contaminated soil. The Decision document was signed 21 February 2001. The CMI report was submitted to the state in FY04. NFA status expected.

No further action is required under the IRP.

STATUS

RRSE RATING: High

CONTAMINANTS: PCBs, SVOCs

MEDIA OF CONCERN: Soil

COMPLETED IRP PHASE: RFA, RFI, CMI(C)

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 200109

FORMER TRANSFORMER STG BLD 4240
FTKX-34

SITE DESCRIPTION

The Transformer Storage site at Building 4240 is centrally located on the west side of Fort Knox, on Park Road and Chaffee Avenue. PCB transformers were stored in a fenced in area behind Building 4240 from 1981 to 1984. Non-PCB transformers continued to be stored at this site until 1991. Building 4240 was demolished and the area cleared of debris in 1992. The site is without detectable levels of contaminants. The RFI report recommends no further action. This site is included in the RCRA Part B Permit Modification as part of SMUG 2.

No further action is required under the IRP.

STATUS

RRSE RATING: Not Evaluated

CONTAMINANT: PCBs

MEDIA OF CONCERN: Soil

COMPLETED IRP PHASE: RFA, RFI (Phase I - EPR Number WHAT-12)

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 199510

FORMER TRANSFORMER STG BLD 4019
FTKX-35

SITE DESCRIPTION

The Transformer Storage Building 4019 is located off of Vine Grove Road in the southwest quadrant of Fort Knox. Non-PCB containing transformers and other electrical equipment were stored in this area. The golf course lies to the west and east and residential housing is located approximately 300 feet to the south. This location was a transformer substation until 1984. This building and the fenced-in area around the building were used to store transformers up until 1990.

Contamination was found to be at a point of exposure. The site is included in the RCRA Part B Permit signed 21 January 1997, SMUG 2. The Phase I RFI recommended a Phase II RFI to determine the vertical and horizontal contamination behind this building at the old transformer pads. The Phase II Fieldwork was completed in FY98. The Draft report submitted to the state recommended a Corrective Measures Study. The FY99 Corrective Measures Study has been funded. Corrective Measures Implementation (CMI) began in FY00. The FY01 corrective measures Implementation field activities were completed and consisted of excavation and off-site disposal of 500 cubic yards of TSCA-contaminated soil. The Decision document was signed 21 February 2001. The CMI report was submitted to the state in FY04. NFA status expected.

No further action is required under the IRP.

STATUS

RRSE RATING: High

CONTAMINANTS: PCBs, SVOCs

MEDIA OF CONCERN: Soil

COMPLETED IRP PHASE: RFA, RFI, CMI(C)

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 200109

PRINTING PLANT SILVER RECOVERY OPERATION
FTKX-36

SITE DESCRIPTION

The Printing Plant Silver Recovery operation is located at Building 2647, on 14th Armored Road. This SWMU is a silver recovery unit used until Feb 1996. The unit was used to remove silver from spent photographic fixer solution at a rate of one gallon per hour. Effluent discharging to the sanitary sewer was tested daily for silver content. This site is included in the RCRA Part B Permit Modification. The site is OMA funded.

No further action is required under the IRP.

STATUS

RRSE RATING: Not Evaluated

CONTAMINANT: None

MEDIA OF CONCERN: None

COMPLETED IRP PHASE: RFA

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 198902

PARKERIZATION PROCESS AREA BLDG 2783
FTKX-37

SITE DESCRIPTION

The Parkerization Process Area is in the west part of Building 2783, which houses the Electronic Shop, located at the Boatwright Maintenance Area. Metal and solvent contamination is suspected to exist at this site as a result of the production of waste products produced by the parkerization process and as a result of chromic acid spills that occurred in 1989. An estimated 550 gallons of chromic acid was spilled, which resulted in the closing of the process area shortly afterwards. Sludge samples from the floor drainage system and wipe samples collected from the interior surfaces of the area indicate that the metal has accumulated in the floor and other exposed surfaces, especially on the hoods above the vats used in the parkerization process. The process area is equipped with a number of exhaust ducts and vessels that formerly contained the liquids used in the parkerization process.

STATUS

RRSE RATING: High

CONTAMINANTS: Cadmium and compounds, Chromium VI and compounds, Lead, Chromium III

MEDIA OF CONCERN: Sediment - Human and Sediment - Ecological

COMPLETED IRP PHASE: RFA, RFI, CMS, DES, CMI

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 199605

Remedial action was completed in May 1996. The Electronic Components Repair Shop presently uses this building. This site is included in the RCRA Part B Permit Modification.

Remedial action was completed in May 1996.

PCB TRANSFORMER STORAGE SITE BLDG 7331
FTK-038

SITE DESCRIPTION

The site, a Concrete Pad (20 feet by 10 feet) and immediately adjacent soil, is located Southeast of Building 7331 and south of Ninth Ave in the southwest quadrant of Fort Knox. In the past PCB-containing transformers were stored on this pad. The site was identified in the 1986 RFA. Mechanical equipment was stored in this area prior to 1986. This site is included in the RCRA Part B Permit signed 21 January 1997, as SMUG 2. Phase I concrete wipe samples identified no PCBs on-site. Phase II RFI identified metals (lead at 500 ppm) in surface soil. No PCBs were identified. The Draft report was submitted to the state and comments have been received and addressed. The report recommended a Phase III RFI. The RFI was funded in FY00 to determine the extent of metals contamination at depth. The FY01 corrective measures Implementation field activities were completed and consisted of excavation and off-site disposal of 600 cy of contaminated soil. The Draft CMI report was submitted. The Decision document was signed 21 February 2001. The CMI report was submitted to the state in FY04. NFA status expected.

STATUS

RRSE RATING: Medium

CONTAMINANT: Metals, SVOCs

MEDIA OF CONCERN: Soil

COMPLETED IRP PHASE: RFA, RFI, CMI(C)

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 200109

No further action is required under the IRP.

ABANDONED GASOLINE LINE DISTRIB SYSTEM
FTKX-39

SITE DESCRIPTION

The Abandoned Gasoline Line Distribution System was a series of six areas of independent underground pipelines used to distribute gasoline throughout the installation. This system was abandoned in the late 1940s. An assessment was done to determine the location and extent of the distribution system. The system consisted of more than 50,000 lineal feet of 2.5 to 6.5-inch steel pipe. Accessible piping (i.e., present along roads) has been removed; piping that crossed roadways was closed in place. Simultaneous with the piping removal 220 cy of contaminated soil was removed and disposed off-site. In two locations, however, impacted soil remains for future action because continued excavation would have been cost prohibitive. That is, roads and building foundations would have been impacted by the up to 30-feet-deep excavations. These areas will either be eliminated via risk assessment (following RCRA guidance) or be subject to long-term monitoring.

Closure reports have been submitted on these areas. The Decision Document was signed 31 March 1999. The site is part of RCRA Part B Permit signed 21 January 1997. The removal of pipelines occurred in FY99. CMI reports were submitted to the State in 1999. Most of the pipeline was excavated except in a few areas where it could not be excavated. The Field work was completed in FY03. Additional samples were taken and the site was reevaluated under the UST criteria from a Class 4 site to a Class 3 site. The Final report was submitted to state 2nd quarter FY04. The Sites are clean and the installation expects NFA.

STATUS

RRSE RATING: High

CONTAMINANTS: BTEX, Lead

MEDIA OF CONCERN: Soil

COMPLETED IRP PHASE: RFA, RFI, DES, CMI

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 200309

SANDERS SPRING
FTKX-41

SITE DESCRIPTION

Sanders Spring is located near the intersection of Seventh Armored Division Road and Seventh Armored Division Cut-Off Road. Sometime during 1992, discharge water from the Radcliff Sewage Treatment Plant was incidentally rerouted, due to the development of a sinkhole, to Sanders Spring Lake. Analysis of the sludge from the bottom of the lake and various species of fish show detectable amounts of Mercury. This lake was utilized for fishing, and had been closed to all recreational activities; however, the discharge from the sewage treatment plant is now piped elsewhere, fish have been periodically sampled and have been found to contain levels of mercury beneath the regulatory limits. The lake has been re-opened for recreational purposes, and Fort Knox does not plan further action.

No further response required and no action required under the IRP.

STATUS

RRSE RATING: Not Evaluated

CONTAMINANT: Mercury

MEDIA OF CONCERN: Soil, Surface Water, Groundwater

COMPLETED IRP PHASE: RFA (Sampling and Analysis)

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 199406

ANDERSON GOLF COURSE
FTK-41A

SITE DESCRIPTION

Anderson Golf Course is located next to Wilson Road in the most southern region of the installation. The area of concern consists of the pesticides mixing pad and adjacent soils. USAEHA has completed a pesticide review at the facility and, due to the presence of substantial contamination in buildings and around the pads, the facility was closed in late 1993. Part of RCRA Part B Permit Modification. KDWM has determined that the mixing pad is a SWMU. Confirmatory sampling field work has been completed. The Draft report was submitted to the state in FY98 recommending an interim measures action. The Corrective Measures Implementation (CMI) was completed in FY99 and the draft report submitted to the state. In FY00 a No Further Action status from the state was received 15 June 2000.

No further response required and no action required under the IRP.

STATUS

RRSE RATING: Low

CONTAMINANT: Pesticides, Arsenic

MEDIA OF CONCERN: Soil

COMPLETED IRP PHASE: RFA (Confirmatory Sampling), RFI, DES, CMI

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 200006

LINDSEY GOLF COURSE
FTK-41L

SITE DESCRIPTION

Lindsey Golf Course is located near the intersection of Park Road and Vine Grove Road. The areas of concern are the pesticides mixing pad and adjacent soils. USAEHA has completed a pesticide review at the facility and, due to the presence of substantial contamination in buildings and around the pads, the facility was closed in late 1993. KDWM determined that the mixing pad is a SWMU and included this site in the installation RCRA Part B Permit signed 21 January 1998. The Confirmatory sampling field work has been completed. The Draft report was submitted to the state in Spring FY98 recommending a CMI (CMI). In FY99, the CMI (CMI) was completed and the Draft Report was submitted to the state. A No Further Action was received from the state 15 June 2000.

No further response required and no action required under the IRP.

STATUS

RRSE RATING: High

CONTAMINANT: Arsenic, Pesticides

MEDIA OF CONCERN: Soil

COMPLETED IRP PHASE: RFA (Confirmatory Sampling), RFI, DES, CMI

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 200006

TWO GOLF COURSES
FTKX-42

SITE DESCRIPTION

FTKX-42 consists of Anderson and Lindsey Golf Courses, Anderson being located next to Wilson Road in the most southern region of the cantonment area and Lindsey being located near the intersection of Park Road and Vine Grove Road. The areas of concern at these golf courses are the pesticide mixing pads, adjacent soils, and storage buildings. USAEHA has completed a pesticide review at the facilities and, due to the presence of substantial contamination in buildings and around the pads, the facilities were closed in late 1993. A RFI is underway at the sites. It is part of RCRA Part B Permit Modification. KDWM has determined that the two golf course mixing pads are SWMUs. This AEDB-R site has been discontinued. The State of Kentucky created separate SWMUs for each golf course and created a new SWMU-G 7. New AEDB-R numbers are FTKX-41A for Anderson Golf Course and FTKX-41L for Lindsey Golf Course.

Future responses will be under KNOX970001 for FTKX-41A and KNOX970010 for 41L.

STATUS

RRSE RATING: Not Evaluated

CONTAMINANT: Arsenic, Chlordane, Chlorothalonil, Copper and compounds, Dacthal, DDE, Folpet, Oxadiazon, DDD, DDT, Parathion.

MEDIA OF CONCERN: Soil, Surface Water, Groundwater

COMPLETED IRP PHASE: RFA

CURRENT IRP PHASE: See FTKX-41A and 41L

FUTURE IRP PHASE: See FTKX-41A and 41L

RC DATE: 198902

OIL & GREASE PIT
FTKX-43

SITE DESCRIPTION

FTKX-43 was located at the site where Building 2827 once stood. Building 2827 was demolished in the fall of 1993. After the demolition, a grease pit was found which contained POL. In the summer of 1994, the site was investigated and found to have a small amount of contaminated soil but no contaminated groundwater, and the pit was removed. During the pit removal, the small volume of POL-contaminated soil was also removed. A SWMU Assessment Report was prepared and approved by the state and the site is closed.

The remedial action of this site is completed and no further action is required under the IRP.

STATUS

RRSE RATING: Not Evaluated

CONTAMINANT: POL

MEDIA OF CONCERN: Soil, Groundwater

COMPLETED IRP PHASE: RFA, RFI, CMI(C)

CURRENT IRP PHASE: RC

FUTURE IRP PHASE: RC

RC DATE: 199407

PAST MILESTONES

The schedule of the IRP work completed to date and planned through the completion of all restoration work at Fort Knox has been detailed and presented on the following pages.

Phase	AEDB-R	EPR #	Project Description	Year
RFA	At all sites			FY 86
RFI			10 SWMU Sites	FY 90
RFI	FTKX-02	WHAT-11	Closed Residential Landfill	FY 90
CMI	FTKX-15		UST Sites	FY 90
CS	FTKX-15		UST Sites	FY 91
RFI			SWMU Investigations	FY 91
RFI	FTKX-02	WHAT-11	Closed Residential Landfill GW Contamination	FY 91
CS	FTKX-15		UST Sites	FY 92
RFI			SWMU Investigation Plans FY 92	
CMI	FTKX-15	KNO090F056	Closure of Abandoned USTs	FY 92
CMI	FTKX-39	KNOS090S042	Close Abandoned Gas Distribution Lines	FY 92
CS	FTKX-43	KNOX940002	Grease Pit	FY 93
CS	FTKX-15	KNOX930021	UST Sites	FY 93
RFI		KNOS930017	UST Sites	FY 93
RFI	FTKX-39	KNO090S042	Abandoned Gas Distribution Lines	FY 93
CMI	FTKX-15	KNOS930020	UST Sites	FY 93
RFI			SWMUs	FY 93
REM		KNO-89-26		FY 93
REM		KNO090F056	Closure of Abandoned USTs	FY 93
CS	FTKX-43	KNOX940002	Grease Pit	FY 94
RFI	WHAT-11	Closed Residential Landfill	FY 94	
DES	FTKX-39	KNO090S042	Two Golf Courses	FY 94
CMI	FTKX-15	KNOS930020	At UST Site 2823 Soil Removal	FY 94
REM	FTKX-15	KNOS930019	UST Sites	FY 94
DES	FTKX-39	KNO090S042	Closed Abandoned Gas Distribution Lines	FY 94
RFI	FTKX-40	KNOS930017	UST (1473-A) Site Closure	FY 94
CS	FTKX-15	KNOX940020	UST Sites	FY 95
RFI	FTKX-40	KNOS930017	UST Site 1473-A Site Closure	FY 95
RFI	FTKX-01	KNOX950005	Closed Landfill 9th Wilson Road	FY 95
RFI	FTKX- 10, 21, 22, 31, 32, 34, 35, and 38 (FTKX950006)			FY 95

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Schedule

PAST MILESTONES, continued

Phase	AEDB-R	EPR #	Project Description	Year
RFI	FTKX- 11, 12, 17 and 18	FTKX950003	SWMU G4	FY 95
RFI	FTK-008, 14, 16 and 24	KNOX950004		FY 95
RFI	FTKX-42	KNOS920028	Two Golf Courses	FY 95
RFI	FTKX-02	WHAT-11	Closed Residential Landfill	FY 95
DES	FTKX-39	KNO090S042	Abandoned Gasoline Distribution Line	FY 95
DES	FTKX-37	KNO089F036	Parkerization Site	FY 95
CMI	FTKX-15	KNOS930021	UST Sites	FY 95
CMI	FTKX-15	KNOS930022	UST Removals	FY 95
RFI	FTKX-01	KNOX960052	Closed Landfill 9th Wilson	FY 96
RFI	FTKX-10	KNOX960029	Two Sludge Lagoons	FY 96
RFI	FTK-011	KNOX960036	17 WWTP Sludge Drying Beds	FY 96
RFI	FTKX-12	KNOX960044	WWTP Filter Press Building	FY 96
CS	FTKX-15A	KNOX960048	UST & Pipeline Building 102	FY 96
CS	FTKX-15B	KNOX960049	UST Site Burke Motor Park	FY 96
CMI	FTKX-16	KNOX960046	Multiple AST Sites	FY 96
RFI	FTKX-17	KNOX960050	Multiple Closed Oil/Water Separator Sites	FY 96
RFI	FTK-018	KNOX960043	Two Central Washracks	FY 96
RFI	FTK-020	KNOX940020	DRMO Waste Oil Tank	FY 96
RFI	FTKX-21	KNOX960053	Spent Solvent Storage Area (Boatwright)	FY 96
RFI	FTKX-22	KNOX960028	Pesticide Storage Tank Bldg. 112	FY 96
RFI	FTKX-24	KNOX960047	Firefighter Training Area	FY 96
RFI	FTKX-29	KNO-89-S3	Crumb Range EOD Site	FY 96
RFI	FTKX-30	KNOX960035	Tioga Springs EOD Site	FY 96
RFI	FTKX-31	KNOX960037	Transformer Storage Area 58, 59, & 60	FY 96
RFI	FTKX-32	KNOX960038	Transformer Storage Area Building 2953	FY 96
RFI	FTKX-33	KNOX960039	Transformer Storage Area Paint Yard	FY 96
RFI	FTKX-35	KNOX960041	Transformer Storage Area Building 4019	FY 96
CMI	FTKX-37	KNO089F036	Parkerization Process Area	FY 96
RFI	FTK-038	KNOX960042	Transformer Storage Area Concrete Pad	FY 96
CMS	FTKX-39	KNO090S042	Abandoned Gasoline Distribution Line	FY 96
RFI	FTKX-01	KNOX960052	Closed Landfill 9th & Wilson	FY 97
RFI	FTKX-02	WHAT-11	Closed Residential Landfill	FY 97
RFI	FTKX-10	KNOX960029	Two WWTP Sludge Lagoons	FY 97
RFI	FTK-011	KNOX960036	17 WWTP Sludge Drying Beds	FY 97
RFI	FTKX-12	KNOX960044	WWTP Filter Press Building	FY 97
CS	FTKX-15A	KNOX960048	UST & Pipeline Building 102	FY 97
CS	FTKX-15B	KNOX960049	UST Site Burke Motor Park	FY 97
CS	FTKX-15D	KNOX930021	UST Site 2823	FY 97

Past Milestones continued next page

PAST MILESTONES, continued

Phase	AEDB-R	EPR #	Project Description	Year
RFI	FTKX-16	KNOX960046	Multiple AST Sites	FY 97
RFI	FTKX-17	KNOX960050	Multiple Closed Oil/Water Separator Sites	FY 97
RFI	FTK-018	KNOX960043	Two Central Washracks	FY 97
RFI	FTK-020	KNOX940020	DRMO Waste Oil Tank	FY 97
RFI	FTKX-21	KNOX960053	Spent Solvent Storage Area (Boatwright)	FY 97
RFI	FTKX-22	KNOX960028	Pesticide Storage Tank Bldg. 112	FY 97
RFI	FTKX-24	KNOX960047	Firefighter Training Area	FY 97
RFI	FTKX-29	KNO-89-S3	Crumb Range EOD Site	FY 97
RFI	FTKX-30	KNOX960035	Tioga Springs EOD Site	FY 97
RFI	FTKX-31	KNOX960037	Transformer. Storage Area 58, 59, & 60	FY 97
RFI	FTKX-32	KNOX960038	Transformer Storage Area Bldg. 2953	FY 97
RFI	FTKX-33	KNOX960039	Transformer Storage Area Paint Yard	FY 97
RFI	FTKX-35	KNOX960041	Transformer Storage Area Bldg. 4019	FY 97
RFI	FTK-038	KNOX960042	Transformer Storage Area Concrete Pad	FY 97
CMS	FTKX-39	KNO090S041	Abandoned Gasoline Distribution Line	FY 97
CMI	FTKX-39	KNO090S042	Abandoned Gasoline Distribution Line	FY 97
RFI	FTKX-40	KNOS930017	UST Site 1473-A Site Closure	FY 97
RFI	FTK-41A		Anderson Golf Course	FY 97
RFI	FTK-41L		Lindsey Golf Course	FY 97
RFI	FTKX-01		Closed Landfill 9th & Wilson	FY 98
RFI	FTKX-02		Closed Residential Landfill	FY 98
RFI	FTKX-10		Two WWTP Sludge Lagoons	FY 98
RFI	FTK-011	KNOX960036	17 WWTP Sludge Drying Beds	FY 98
RFI	FTKX-12	KNOX960044	WWTP Filter Press Building	FY 98
CS	FTKX-15A		UST and Pipeline Bldg. 102	FY 98
CS	FTKX-15B	KNOX960049	UST Site Burke Motor Park	FY 98
RFI	FTKX-16	KNOX960046	Multiple AST Sites	FY 98
RFI	FTKX-17	KNOX960050	Multiple Closed Oil/Water Separator Sites	FY 98
RFI	FTK-018	KNOX960043	Two Central Washracks	FY 98
RFI	FTK-020		DRMO Waste Oil Tank	FY 98
RFI	FTKX-21		Spent Solvent Storage Area (Boatwright)	FY 98
RFI	FTKX-22		Pesticide Storage Tank Bldg. 112	FY 98
RFI	FTKX-24		Firefighter Training Area	FY 98
RFI	FTKX-29	KNO-89-S3	Crumb Range EOD Site	FY 98
RFI	FTKX-30		Tioga Springs EOD Site	FY 98
RFI	FTKX-31		Transformer. Storage Area 58, 59, & 60	FY 98
RFI	FTKX-32		Transformer Storage Area Bldg. 2953	FY 98
RFI	FTKX-33		Transformer Storage Area Paint Yard	FY 98

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Schedule

PAST MILESTONES, continued

Phase	AEDB-R	EPR #	Project Description	Year
RFI	FTKX-35		Transformer Storage Area Bldg. 4019	FY 98
RFI	FTK-038		Transformer Storage Area Concrete Pad	FY 98
CMI	FTKX-39		Abandoned Gasoline Distribution Line	FY 98
RFI	FTKX-40		UST Site 1473-A Site Closure	FY 98
RFI	FTK-41A		Anderson Golf Course	FY 98
RFI	FTK-41L		Lindsey Golf Course	FY 98
RFI	FTKX-01		Closed Landfill 9th & Wilson	FY 99
RFI	FTKX-02		Closed Residential Landfill	FY 99
RFI	FTKX-10		Two WWTP Sludge Lagoons	FY 99
RFI	FTK-011	KNOX960036	17 WWTP Sludge Drying Beds	FY 99
RFI	FTKX-12	KNOX960044	WWTP Filter Press Building	FY 99
RFI	FTKX-15A		UST and Pipeline Bldg. 102	FY 99
RFI	FTKX-15B	KNOX960049	UST Site Burke Motor Park	FY 99
RI	FTKX-15D		UST Site 2823	FY 99
RFI	FTKX-16	KNOX960046	Multiple AST Sites	FY 99
RFI	FTKX-17	KNOX960050	Multiple Closed Oil/Water Separator Sites	FY 99
RFI	FTK-018	KNOX960043	Two Central Washracks	FY 99
RFI	FTK-020		DRMO Waste Oil Tank	FY 99
RFI	FTKX-21		Spent Solvent Storage Area (Boatwright)	FY 99
RFI	FTKX-22		Pesticide Storage Tank Bldg. 112	FY 99
RFI	FTKX-24		Firefighter Training Area	FY 99
RFI	FTKX-29	KNO-89-S3	Crumb Range EOD Site	FY 99
RFI	FTKX-30		Tioga Springs EOD Site	FY 99
RFI	FTKX-33		Transformer Storage Area Paint Yard	FY 99
RFI	FTKX-35		Transformer Storage Area Bldg. 4019	FY 99
RFI	FTK-038		Transformer Storage Area Concrete Pad	FY 99
CMI	FTKX-39		Abandoned Gasoline Distribution Line	FY 99
RFI	FTKX-40		UST Site 1473-A Site Closure	FY 99
RFI	FTK-41A		Anderson Golf Course	FY 99
RFI	FTK-41L		Lindsey Golf Course	FY 99
RFI	FTKX-01		Closed Landfill 9th & Wilson	FY 00
RFI	FTKX-02		Closed Residential Landfill	FY 00
RFI	FTKX-10		Two WWTP Sludge Lagoons	FY 00
RFI	FTKX-12	KNOX960044	WWTP Filter Press Building	FY 00
RFI	FTK-011	KNOX960036	17 WWTP Sludge Drying Beds	FY 00
LTM	FTKX-15B	KNOX960049	UST Site Burke Motor Park	FY 00

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PAST MILESTONES, continued

Phase	AEDB-R	EPR #	Project Description	Year
RFI	FTKX-15D	KNOX930021	UST Site 2823	FY 00
CMI	FTKX-16	KNOX960046	Multiple AST Sites	FY 00
RFI	FTK-018	KNOX960043	Two Central Washracks	FY 00
RFI	FTK-020		DRMO Waste Oil Tank	FY 00
RFI	FTKX-21		Spent Solvent Storage Area	FY 00
RFI	FTKX-22		Pesticide Storage Tank Bldg. 112	FY 00
RFI	FTKX-24		Firefighter Training Area	FY 00
RFI	FTKX-30		Tioga Springs EOD Site	FY 00
RFI	FTKX-33		Transformer Storage Area Paint Yard	FY 00
RFI	FTKX-35		Transformer Storage Area Bldg. 4019	FY 00
RFI	FTKX-39		Abandoned Gas Distribution Line	FY 00
RFI	FTKX-40		UST Site 1473-A Site Closure	FY 00
CMI	FTK-41A		Anderson Golf Course	FY 00
CMI	FTK-41L		Lindsey Golf Course	FY 00
RFI	FTKX-01		Closed Landfill 9th & Wilson	FY 01
RFI	FTKX-02		Closed Residential Landfill	FY 01
RFI	FTKX-15D		UST Site 2823	FY 01
RFI	FTK-020		DRMO Waste Oil Tank	FY 01
RFI	FTKX-30		Tioga Springs EOD Site	FY 01
CMI	FTKX-33		Former Transformer Storage Area (Paint Yard)	FY 01
CMI	FTKX-35		Former Transformer Storage Area Bldg. 4019	FY 01
CMI	FTK-038		Former Transformer Storage Area Bldg.7331	FY 01
RFI	FTKX-39		Abandoned Gasoline Distribution Line	FY 01
RFI	FTKX-40		UST Site 1473-A	FY 01
RFI	FTKX-01		Closed Landfill 9th & Wilson	FY 02
LTM	FTKX-02		Closed Residential Landfill	FY 02
RFI	FTKX-10		WWTP Sludge Lagoons	FY 02
RFI	FTK-020		DRMO Waste Oil Tank	FY 02
RFI	FTKX-21		Spent Solvent Storage Area	FY02
RFI	FTKX-22		Pesticide Rinse Tank Bldg 112	FY 02
RFI	FTKX-24		Firefighter Training Area	FY 02
RFI	FTKX-30		Tioga Springs EOD Site	FY 02
CMI	FTKX-33		Former Transformer Storage Area (Paint Yard)	FY 02
CMI	FTKX-35		Former Transformer Storage Area Bldg. 4019	FY 02
CMI	FTKX-38		Former Transformer Storage Area Bldg. 7331	FY 02
CMI	FTKX-39		Abandoned Gasoline Distribution Line	FY 02

Past Milestones continued next page

Schedule

PAST MILESTONES, continued

Phase	AEDB-R	EPR #	Project Description	Year
RFI	FTKX-01		Closed Landfill 9th & Wilson	FY 03
LTM	FTKX-02		Closed Residential Landfill	FY 03
RFI	FTKX-10		WWTP Sludge Lagoons	FY 03
RFI	FTKX-15D		UST Site 2823 Remediation	FY 03
CMI	FTKX-20		DRMO Waste Oil Tank	FY 03
RFI	FTKX-21		Spent Solvent Storage Area	FY 03
RFI	FTKX-22		Pesticide Rinse Tank Bldg 112	FY 03
RRI	FTKX-24		Firefighter Training Area	FY 03
RFI	FTKX-30		Tioga EOD Site	FY 03
RFI	FTKX-40		UST Site 1473-A	FY 03

PROJECTED MILESTONES

Phase	AEDB-R	Project Description	Year
CMI	FTKX-01	Closed Landfill 9th and Wilson Road	FY 04
CMI	FTKX-02	Closed Residential Landfill	FY 04
CMI	FTKX-10	Two WWTP Sludge Lagoons	FY 04
RFI	FTK-020	DRMO Waste Oil Tank	FY 04
CMI	FTKX-21	Spent Solvent Storage Area	FY 04
LTM	FTKX-22	Pesticide Rinse Tank Bldg 112	FY 04
LTM	FTKX-40	UST Site 1473-A	FY 04
CMI	FTKX-01	Closed Landfill 9th and Wilson Road	FY 05
CMI	FTKX-02	Closed Residential Landfill	FY 05
RFI	FTKX-10	WWTP Sludge Lagoons	FY 05
DES	FTKX-10	WWTP Sludge Lagoons	FY 05
CMI	FTKX-10	WWTP Sludge Lagoons	FY 05
RFI	FTKX-15D	UST Site 2823 Remediation	FY 05
DES	FTKX-15D	UST Site 2823 Remediation	FY 05
CMI	FTKX-15D	UST Site 2823 Remediation	FY 05
RFI	FTK-020	DRMO Waste Oil Tank	FY 05
RFI	FTKX-21	Spent Solvent Storage Area	FY 05
RFI	FTKX-22	Pesticide Rinse Tank Bldg 112	FY 05
DES	FTKX-30	Tioga EOD Site	FY 05
CMI	FTKX-30	Tioga EOD Site	FY 05
LTM	FTKX-40	UST Site 1473-A	FY 05

Projected Milestones continued next page

PROJECTED MILESTONES, continued

Phase	AEDB-R	Project Description	Year
CMI	FTKX-01	Closed Landfill 9th and Wilson Road	FY 06
CMI	FTKX-02	Closed Residential Landfill	FY 06
CMI	FTKX-10	WWTP Sludge Lagoons	FY 06
LTM	FTKX-15D	UST Site 2823 Remediation	FY 06
RFI	FTK-020	DRMO Waste Oil Tank	FY 06
RFI	FTKX-21	Spent Solvent Storage Area	FY 06
DES	FTKX-21	Spent Solvent Storage Area	FY 06
CMI	FTKX-21	Spent Solvent Storage Area	FY 06
RFI	FTKX-22	Pesticide Rinse Tank	FY 06
LTM	FTKX-40	UST Site 1473-A	FY 06
CMI	FTKX-01	Closed Landfill 9th and Wilson Road	FY 07
CMI	FTKX-02	Closed Residential Landfill	FY 07
CMI	FTKX-10	WWTP Sludge Lagoons	FY 07
LTM	FTKX-15D	UST Site 2823 Remediation	FY 07
LTM	FTK-020	DRMO Waste Oil Tank	FY 07
LTM	FTKX-21	Spent Solvent Storage Area	FY 07
LTM	FTKX-22	Pesticide Rinse Tank	FY 07
LTM	FTKX-40	UST Site 1473-A	FY 07
CMI	FTKX-01	Closed Landfill 9th and Wilson Road	FY 08
CMI	FTKX-02	Closed Residential Landfill	FY 08
LTM	FTKX-15D	UST Site 2823 Remediation	FY 08
LTM	FTK-020	DRMO Waste Oil Tank	FY 08
LTM	FTKX-21	Spent Solvent Storage Area	FY 08
LTM	FTKX-22	DRMO Waste Oil Tank	FY 08
LTM	FTKX-40	UST Site 1473-A	FY 08
CMI	FTKX-01	Closed Landfill 9th and Wilson Road	FY 09
CMI	FTKX-02	Closed Residential Landfill	FY 09
CMI	FTKX-10	WWTP Sludge Lagoons	FY 09
LTM	FTKX-15D	UST Site 2823 Remediation	FY 09
LTM	FTKX-21	Spent Solvent Storage Area	FY 09
LTM	FTKX-22	Pesticide Rinse Tank	FY 09
LTM	FTKX-40	UST Site 1473-A	FY 09
CMI	FTKX-01	Closed Landfill 9th and Wilson	FY 10
CMI	FTKX-02	Closed Residential Landfill	FY 10
LTM	FTKX-15D	UST Site 2823 Remediation	FY 10
LTM	FTK-020	DRMO Waste Oil Tank	FY 10
LTM	FTKX-21	Spent Solvent Storage Area	FY 10
LTM	FTKX-22	Pesticide Rinse Tank	FY 10
CMI	FTKX-24	Firefighter Training Area	FY 10
LTM	FTKX-40	UST Site 1473-A	FY 10

Projected Milestones continued next page

Schedule

PROJECTED MILESTONES, continued

Phase	AEDB-R	Project Description	Year
CMI	FTKX-02	Closed Residential Landfill	FY 11
LTM	FTK-020	DRMO Waste Oil Tank	FY 11
LTM	FTKX-21	Spent Solvent Storage Area	FY 11
LTM	FTKX-22	Pesticide Rinse Tank	FY 11
LTM	FTKX-40	UST Site 1473-A	FY 11
CMI	FTKX-02	Closed Residential Landfill	FY 12
LTM	FTKX-21	Spent Solvent Storage Area	FY 12
LTM	FTKX-22	Pesticide Rinse Tank	FY 12
LTM	FTKX-40	UST Site 1473-A	FY 12
CMI	FTKX-02	Closed Residential Landfill	FY 13
LTM	FTKX-21	Spent Solvent Storage Area	FY 13
LTM	FTKX-22	Pesticide Rinse Tank	FY 13
LTM	FTKX-40	UST Site 1473-A	FY 13
CMI	FTKX-01	Closed Landfill 9th and Wilson Road	FY 14
CMI	FTKX-02	Closed Residential Landfill	FY 14
CMI	FTKX-10	WWTP Sludge Lagoons	FY 14
LTM	FTKX-21	Spent Solvent Storage Area	FY 14
LTM	FTKX-22	Pesticide Rinse Tank	FY 14
LTM	FTKX-40	UST Site 1473-A	FY 14
CMI	FTKX-01	Closed Landfill 9th and Wilson Road	FY 15+
CMI	FTKX-02	Closed Residential Landfill	FY 15+
CMI	FTKX-10	WWTP Sludge Lagoons	FY 15+
LTM	FTKX-21	Spent Solvent Storage Area	FY 15+
LTM	FTKX-22	Pesticide Rinse Tank	FY 15+
LTM	FTKX-40	UST Site 1473-A	FY 15+

Projected completion date of all CMI: Sep 2007

Projected completion date of IRP: Sep 2034

Fort Knox Military Reservation Installation Action Plan Schedule

(based on Cost-to-Complete current funding constraints)

CURRENT PHASE | FUTURE PHASE

AEDB-R #	SITE NAME	RRSE	PHASE	FY05	FY06	FY07	FY08	FY09	FY10	FY11+
FTKX-01	Closed Landfill (9th and Wilson)	High	RA(C)							
			RA(O)							
FTKX-02	Residential Landfill	High	LTM							
FTKX-10	WWTP Sludge Lagoons (2)	High	RI/FS							
			RD							
			RA(C)							
			LTM							
FTKX-15D	UST Site 2823 Investigation/REM	High	RI/FS							
			RD							
			RA(C)							
			LTM							
FTK-020	DRMO Former Waste Oil Tank Site	High	RI/FS							
			LTM							
FTKX-21	Boatwright Maintenance Area Near Bldg 2775	High	RI/FS							
			RD							
			RA(C)							
			LTM							
FTKX-22	Bldg. T-112 UST Pesticide	High	RI/FS							
			LTM							
FTKX-24	Fire Fighter Training Area	Med	RI/FS							
			RD							
			RA(C)							
FTKX-30	Tioga Springs EOD Site	High	RD							
			RA(C)							
FTKX-40	UST 1473-A Site Closure	High	LTM							

Remediation Activities

In 1989, the RFA identified 36 sites. Since that time, 12 more have been added, making a total of 48 sites. Five sites are in the RFI phase, three are in the DES phase, four are in CMI(C), three are in CMI(O), and one site is in LTM. Currently 38 sites are response complete requiring no action.

The UST regulation governs the testing and removal of the 96 underground waste oil tanks. The leaking tanks require immediate remedial action. After the tanks have been removed, remedial actions are required to ensure proper clean-up and closure of the site.

COMPLETED REM/ICM/CMI:

- FTKX-12, WWTP Filter Press Building, Corrective Measures Implementation (Removal Action) FY03.
- FTKX-15A, Multiple UST Sites, Site 102, Remedial Action to remove USTs and associated piping, FY90.
- FTKX-15A, UST Pipeline Building 102, Remedial Action (Removal Action) FY03.
- FTKX-15D, Multiple UST Sites, Site 2823, Remedial Action to remove POL contaminated soil, July 1994 (FY94).
- FTKX-16, Multiple Above Ground Storage Tanks, Remedial Action to treat contami nated soil at AST North of Building 5222. FY99.
- FTKX-16, Multiple Above Ground Storage Tanks, Remedial Action to treat contami nated soil at AST North of Building 5222. FY01.
- FTK-020, DRMO Site, Remedial Action to remove UST and oil water separator, FY90.
- FTKX-22, Pesticide Rinse Tank Site, Remedial Action to remove UST, FY88.
- FTKX-29, Crumb Range EOD Site, Corrective Measures Implementation (Implement Closure Plan), FY01 to FY07.
- FTKX-33, Transformer Storage Paint Shop Yard, Remedial Action FY00. Awaiting State Review in FY03.
- FTKX-35, Transformer Storage Building 4019, Remedial Action, FY00. Awaiting State Review in FY03.
- FTKX-37, Parkerization Process Area, Remediation and Decontamination. FY96.
- FTK-038, Transformer Storage Area Concrete Pad, Remedial Action, FY00. Awaiting State Review in FY03.
- FTKX-39, Abandoned Gasoline Line Distribution System, Remedial Action to remove a portion of the pipeline and adjacent POL contaminated soil, May 1994 (FY94).
- FTKX-39, Abandoned Gasoline Distribution Lines, Remedial Action to treat contami nated soil and for closure, FY99.
- FTKX-39, Abandoned Gasoline Distribution Line, Remedial Action to treat contaminated soil FY00.
- FTKX-40, Site 1473-A, Remedial Action to remove USTs, FY92.

Remediation Activities continued next page

Remediation Activities

COMPLETED REM/ICM/CMI: continued:

- FTK-41A, Anderson Golf Course. Interim Measures Action FY00.
- FTK-41L, Lindsey Golf Course. Interim Measures Action FY00.
- FTKX-43, Oil and Grease Pit, Remedial Action to remove pit and POL contaminated soil, July 1994 (FY94).

CURRENT REM/ICM/CMI:

- FTKX-01 Closed Landfill 9th Wilson Road, CMI phase to begin in FY04.
- FTKX-02, Residential Landfill, Long Term Monitoring.
- FTKX-15B, UST, Burke Motor Park (Bldg. 2730), Site Investigation Report reviewed by state regulators. Long Term Monitoring of Groundwater has begun.

FUTURE REM/ICM/CMI:

- FTKX-01 Closed Landfill 9th Wilson Road CMI to install a cap and methane gas collection system (RAC) FY04-05, CMI (RAO) FY05 – FY11.
- FTKX-02 Residential Landfill, LTM FY05-FY11+.
- FTKX-02, Residential Landfill, Long Term Monitoring from FY05-FY33.
- FTKX-10 WWTP Sludge Lagoons CMI (RAC) soil excavation FY05-FY07.
- FTK-011, WWTP Sludge Drying Beds, CMI FY05, LTM FY07-FY12.
- FTKX-15D UST Site 2823 CMI monitor for natural attenuation FY05, LTM FY06-FY10.
- FTK-020 DRMO Waste Oil Tank, RFI FY05-FY06, LTM FY07-FY12.
- FTKX-21 Boatwright Spent Solvent Storage Area RFI FY05-FY06, CMI FY06, LTM FY07-FY26.
- FTKX-22 Pesticide Storage Tank Bldg. 112 RFI FY05-FY06, LTM FY07-FY24.
- FTKX-24 Firefighter Training Area, CMI soil excavation FY10.
- FTKX-30 Tioga EOD Site, CMI soil excavation FY05.
- FTKX-40 UST Site 1473-A LTM FY05 FY11+.

Remediation Activities continued next page

POTENTIAL SITES FOR ACCELERATED ACTION:

- FTKX-15B (USTs Burke Motor Park, Bldg. 2730). Four quarters of monitoring indicates no contamination above action levels. Report presenting results and recommending no further action status has been submitted to state. Should receive no further action status in FY04.
- FTKX-15D (Former UST Site 2823). Biological data has been collected to support recommendation for natural attenuation as the remediation method of choice for ground water contamination. CAP will be submitted to the state for review in FY04 recom mending Biodegredation.
- FTKX-18 (Two Central Wash Racks). Characterization of sediments in the four basins indicates that contamination does not exceed action levels. Draft Phase IA report has been submitted to state recommending no further action. Should receive no further action status in FY04.

RESTORATION ADVISORY BOARD (RAB) STATUS

Status of Community Involvement

The surrounding communities of Fort Knox include the towns of Muldraugh, Radcliff, Shepardsville, Vine Grove, Colesburg, Lebanon Junction and Elizabethtown Kentucky. It has been determined that there is no interest in establishing a RAB.

Determining Interest In Establishing RAB

Insufficient community interest in the past has indicated a lack of interest in establishing a RAB. Fort Knox received no comments in 1996 when the RCRA Part B Permit was renewed or in 2001 when an OB/OD site closure plan was public noticed. The Kentucky Natural Resources and Environmental Protection Cabinet, Department of Environmental Protection, Division of Waste Management, Hazardous Waste Branch is the regulatory agency that grants and administers this permit and determines compliance with corrective actions of the restoration sites.

2005	Fort Knox Installation Action Plan
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